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# Report on WIC Nutrition Education Services

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REPORT ON WIC NUTRITION EDUCATION SERVICES

STUDY OF WIC PROGRAM  
AND PARTICIPANT CHARACTERISTICS

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## REPORT ON WIC EDUCATION SERVICES

### EXECUTIVE SUMMARY

One of the primary benefits of the Special Supplemental Food Program for Women, Infants and Children (WIC) is the provision of nutritional education to participants, their parents or caregivers. In Fiscal Year 1985, the WIC Program served an average of 3.14 million participants at a total cost of \$1.5 billion, of which about \$50 million paid for nutrition education services (one-sixth of the costs of nutrition services and administration, which comprise 20 percent of the total cost).

In September 1983, the Food and Nutrition Service undertook the Study of WIC Participant and Program Characteristics to examine the characteristics of WIC participants and the services they receive. A special focus of the study was the nutrition education services offered by State and local agencies and the use of those services by program participants. Despite the integral role of nutrition education in the WIC Program, there has been little information on the ways in which nutrition education is provided to WIC participants, partly because of its diverse nature.

This study provides descriptive information about nutrition education; it does not attempt to evaluate the quality or effectiveness of the services. The analyses examine ways in which the program operated in late 1984, but do not imply which types of nutrition education are the best. For example, a factor that is associated with longer or more frequent nutrition education may not necessarily lead to better nutrition education.

## Major Findings

1. Despite the lack of a requirement for participants to attend nutrition sessions, WIC participants generally received about two contacts during their first six months of certification. In later certifications, the frequency of nutrition education decreased, but more topics were taught.

This suggests that, rather than being taught the same topics repeatedly, participants got more information when they participated for a longer time. Pregnant women had a higher rate of nutrition education contacts per six months than the other categories and non-breastfeeding postpartum women had a lower rate.

2. The primary modes of nutrition education were individual and group counseling sessions and use of printed materials (pamphlets or posters), although other modes (food demonstrations, slide shows, etc.) were used.

Five models of nutrition education were identified, using factor analysis:

- Group sessions, which are held in a classroom and frequently use audiovisual aids to present information.
- Specially arranged sessions that involve a demonstration and/or handouts of pamphlets or brochures.
- Displays of printed materials in offices and/or waiting rooms.
- Tests and tapes that are provided to participants when they pick up vouchers or food, but that are seldom used during medical visits.

- Individual sessions that are provided at certification and do not generally involve the use of materials or equipment.

Since most sites used a combination of settings and methods to provide nutrition education, participants were likely to have multiple types of exposure. However, sites that more frequently used some of these techniques had significant differences in some aspects of nutrition education. For example, sites that more commonly held group sessions or taught nutrition education during food or voucher pick-ups had higher frequencies of nutrition education contacts.

3. The length of nutrition education sessions was limited. Individual sessions had a mean length of 16 minutes and group sessions had a mean length of 26 minutes. Agencies which held longer sessions tended to have less frequent contacts per participant.

Local staff estimated the mean time for individual sessions was 16.1 minutes, with a range from 3 to 45 minutes. The mean time for group sessions was 26.4 minutes, with a range from 5 to more than 99 minutes. Included in the group sessions was a mean time of 7 minutes spent answering questions, which would indicate the extent to which the group sessions are individualized. Although there was a wide range, the typical time spent for WIC nutrition education, especially in individual sessions, was quite brief.

There were inverse relations between service sites' average duration of individual and group sessions and the average number of contacts per participant. The more frequent the sessions, the shorter they tended to be, and vice versa. This suggests a compensatory relation to conserve staff and program resources.

4. Characteristics of the local WIC programs and of the staff were related to the delivery of nutrition education services.

The study examined the simple correlations of a variety of local agency and staff characteristics with parameters of nutrition education services, including: the estimated number of contacts, lengths of individual and group sessions and group session size. Some of the key relations include:

- Service sites with more participants held group sessions which tended to be longer and have more group members. However, size did not affect the estimated number of contacts.
- Sites which supplied food through vouchers (as opposed to home delivery of foods) and issued vouchers at least monthly provided more nutrition education contacts.
- Service sites sponsored by a health agency tended to have fewer nutrition education contacts, but held longer individual sessions.
- Sites which had public transportation or child care available held longer individual sessions.
- Agencies with a higher percentage of nutritionists or dieticians as the nutrition educators held fewer nutrition education contacts, but had longer group sessions. Conversely, increased use of nurses or paraprofessionals was associated with an increased frequency of nutrition education contacts.
- Programs which had more participants per full time equivalent WIC nutrition educator (i.e., per 40 hours spent on WIC nutrition education) provided less information about WIC in general and fewer participant specific topics.

5. Agencies which offered a greater intensity of breastfeeding counseling services had a higher proportion of women breastfeeding.

Program regulations require that pregnant participants be encouraged to breastfeed. The study examined the relation of local breastfeeding promotion efforts to the ratio of breastfeeding to pregnant participants at the service sites, a rough measure of the pregnant women who later breastfeed. For the typical clinic, this ratio was about 30 percent.

The most common methods of breastfeeding promotion were provision of pamphlets during a discussion about breastfeeding and individual counseling at the service site. Two particular policies which were significantly associated with the proportion of breastfeeding women were: (1) providing group sessions and/or hotline services at the WIC site and (2) making referrals to support groups or hotlines not operated by the WIC Program. These suggest the importance of actively supporting new mothers while they are breastfeeding through support groups or hotlines, whether or not they are operated at the WIC site. However, these associations are not necessarily causal. An alternative explanation is that WIC sites which had a higher proportion of breastfeeding women provided special services because of the interest of their clientele.

6. Lack of staff time and of participant interest were the leading constraints to the provision of nutrition education, as perceived by local staff. These perceived constraints were significantly related to the actual delivery of nutrition education services.

Lack of staff time and of clinic space were the most serious constraints for providers. Staff perceived that lack of interest, transportation and child care were the leading constraints for participants.

Not surprisingly, these perceived constraints were associated with measures of nutrition education delivery. There was a lower frequency of nutrition education contacts for agencies which perceived a lack of staff time or number or a lack of participant interest, time or schedule. However, as a possible compensating factor, inadequate participant schedule or transportation was associated with longer group and individual counseling sessions.

REPORT ON WIC NUTRITION EDUCATION SERVICES



## 1.0 INTRODUCTION

The Special Supplemental Food Program for Women, Infants and Children (WIC) is a Federal program for low-income pregnant, postpartum and breastfeeding women, infants and children under five years of age who are nutritional risk. The primary goal of WIC is to improve maternal and child nutrition and, ultimately, health status. The program, which is administered by State and local WIC agencies, provides supplemental foods, access to health services and, central to this report, nutrition education. The supplemental foods are intended to improve the diets of participants during a critical period of the life cycle; the nutrition education is intended to improve the utilization of these foods and to improve diets even after participation has ended.

The WIC Program served an annual average 3.04 million participants per month in Fiscal Year 1984. The Federal cost of the program was about \$1.39 billion, of which about 80 percent (\$1.12 billion) was for the cost of supplemental foods and about 20 percent (\$269 million) was for the provision of program services, including nutrition education, and administration. The authorizing legislation requires that at least one-sixth of the administrative and program services funds be used for nutrition education. Preliminary data suggest that about \$45 million in nutrition education expenditures was actually reported by State agencies in Fiscal Year 1984. Since States need not report expenditures in excess of their one-sixth requirement, the actual level of nutrition education activity may be somewhat higher.

Although nutrition education is a critical element of the WIC program, there has been little information available at the Federal level to describe how local programs provide nutrition education or the effect that nutrition education has on participants. In September 1983, the Food and Nutrition Service sponsored the Study of WIC Participant and Program Characteristics--an effort intended to provide an extensive data base on WIC programs and participants. To address the lack of information on nutrition education, the Study was expanded to include detailed data on the nutrition education process: the methods that State and local agencies use to teach and support nutrition education, the staff that provide nutrition education, and the extent to which participants receive nutrition education. The resulting data base is the source of the information presented in this report, which describes the

process of providing nutrition education and relates, where possible, the various factors associated with the delivery of this program benefit.

#### 1.1 WIC and the Provision of Nutrition Education

The WIC program's emphasis on nutrition education has evolved over a number of years. Although some local agencies provided nutrition counseling as an auxiliary service soon after the program began operating in 1974, nutrition education requirements were not included in program regulations until 1975, when P.L. 94-105 extended the operation of the WIC Program and cited nutrition education as an allowable labor cost. At that time, program regulations were modified to mandate that nutrition education services be provided to all program participants. This mandate was further expanded and specified in P.L. 95-627, enacted in 1978.

The nutrition education component of WIC has two basic goals:

- to emphasize the relationship between nutrition and health, with special emphasis on the nutritional needs of pregnant, postpartum and breastfeeding women; infants; and children 1-5 years of age; and
- to assist participants in achieving positive, long-term changes in food habits, when needed, in order to improve nutritional status and prevent development of nutrition-related problems.

Regulations at the time of this survey required that all participants be offered at least one "basic" nutrition education contact and one other, either secondary or high-risk, contact during each certification period.\* In general, contacts may be in groups or in individual counseling sessions. Although regulations require that agencies make nutrition education available to participants, people are not required to attend nutrition education sessions as a condition for receiving supplemental foods. Generally, nutrition education is provided to the woman or the child's parent or caretaker.

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\*New final regulations (February 13, 1985) have slightly revised these requirements. At least two nutrition education contacts must be made available per certification period, but State and local agencies have more flexibility in determining the content of nutrition education sessions. These changes were not in effect at the time of the study.

The old regulations define a "basic" contact as one that covers one or more of the following topics, as well as additional topics that may be defined by the State Agency:

- the participant's nutritional risk condition and ways to achieve an adequate diet;
- the importance of WIC supplemental foods being consumed by the person for whom they were prescribed rather than by other members of the participant's family;
- the WIC Program as a supplemental food program rather than a total food program;
- the nutritional value of the supplemental foods;
- the importance of early and regular use of health care services;
- for pregnant women, the importance of breastfeeding the child;\* and
- for parents or caregivers of participating infants and children, guidance in meeting the infant's or child's nutritional needs.

Secondary contacts, which generally are provided months after the basic contact, may take the form of individual or group sessions. Under the old regulations, one or more of the following topics had to be addressed during a secondary contact:

- the participant's particular nutritional needs according to participant category, e.g., the nutritional needs of pregnant women;
- the relationship of diet to health;
- the necessity of consuming a variety of foods, including those not provided by the WIC program; and
- nutrients of special importance to the individual participant.

In addition, other topics could be specified by the State Agency.

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\*Regulations state that encouragement to breastfeed must be discussed in a basic nutrition education contact with all pregnant women; current regulations continue to require encouragement to breastfeed.

High-risk contacts are intended for participants determined by their local agency to be particularly at-risk nutritionally. Such contacts, which are likely to be individual counseling sessions, should include the topics listed above as well as discussion of issues directly related to the individual's particular nutrition problems. The old regulations required that an individual nutrition care plan be developed for any participant determined to be at high risk, and that these care plans be used in designing and conducting nutrition education contacts. Individual care plans were to be developed for any type of contact, if a participant requested one.

The assumption underlying the nutrition education component of WIC is that appropriate nutrition education will lead to changes in knowledge and attitudes that will, in turn, lead to improved dietary behavior. If the changes in dietary behavior endure, these will result in improved nutritional and health status. Figure 1 illustrates a model of the nutrition education process and the external factors that influence the delivery of the program and its possible outcomes. This model is summarized briefly below.

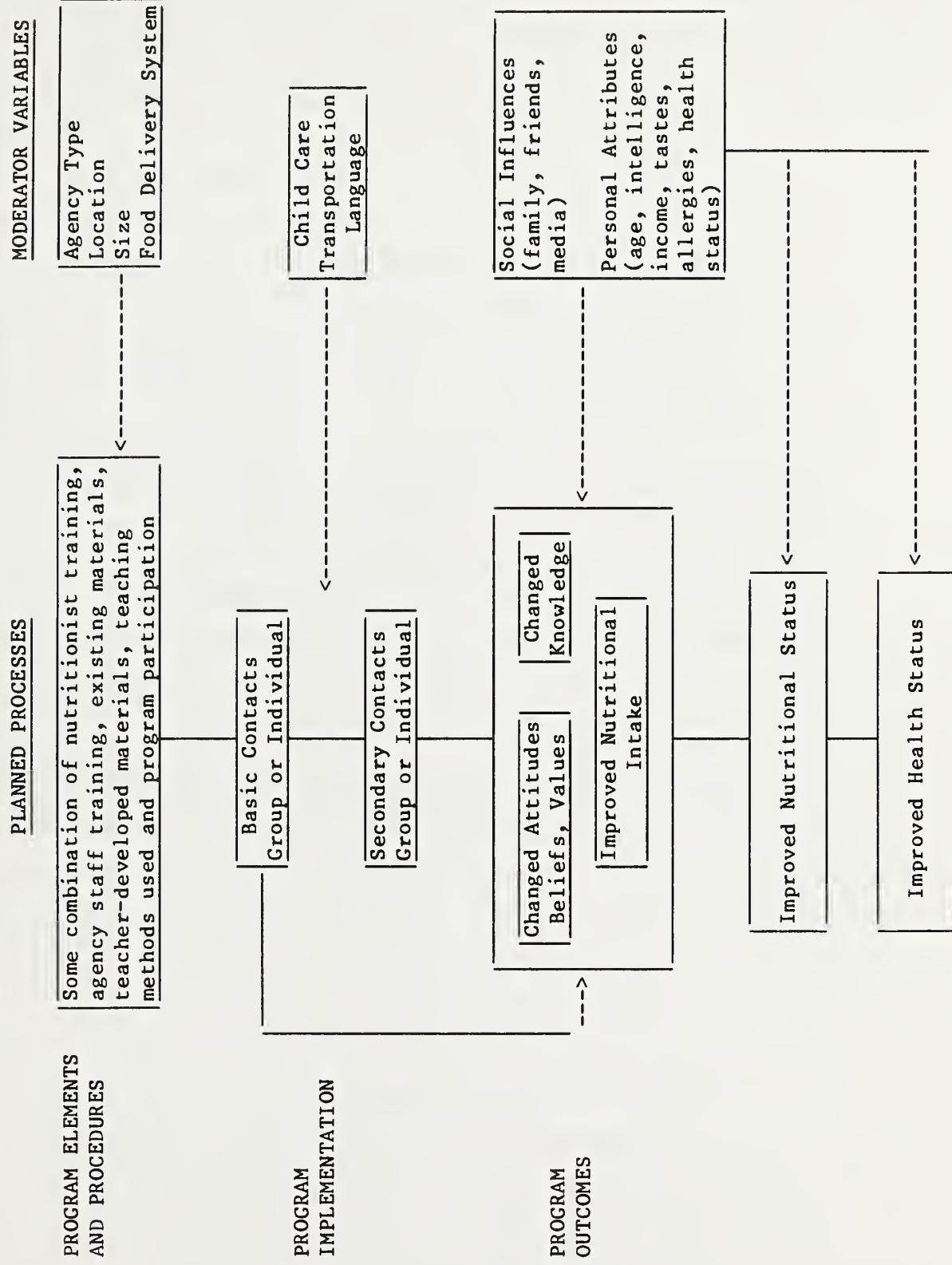
#### Program Elements

The form and content of nutrition education in WIC varies greatly from one local agency to another. State and local agencies have considerable latitude in deciding who will conduct nutrition education; the form in which it will be delivered (e.g. in group or individual sessions); the topics that will be addressed; and the teaching methods and materials that will be used. Nutrition education may be provided by personnel with some formal credentials in nutrition or medicine (e.g. nutritionists, dietitians, physicians, nurses) or by staff members who may have in-service training or experience, but limited formal training in nutrition (e.g. administrative staff, social workers, nutrition aides, volunteers). In some clinics, selected WIC participants themselves assist in conducting nutrition education.

In addition to the nutrition issues that must be covered, a wide variety of topics is offered, particularly in group classes. In discussions of the importance of particular foods and their relationship to health, sessions may be supplemented with discussions of the more practical matters of buying or handling food such as stretching food dollars and the preparation and storage of foods. These topics may be discussed in individual counseling

Figure 1

MODEL OF HOW NUTRITION EDUCATION IN WIC AFFECTS HEALTH OUTCOMES



sessions, in group lectures or sessions, or during presentations of films, slides or filmstrips. Provided the required individual or group sessions are conducted, nutrition education may also be presented more informally through printed materials, including pamphlets, newsletters or recipes. A single local agency may use only one method of nutrition education (e.g. all participants may be seen in one-on-one counseling sessions) or may utilize a combination of methods.

All of these program elements may be influenced by the characteristics of the local organization through which WIC services are provided. The term "local agency" encompasses a range of agency types, including:

- public or private nonprofit health agencies that directly provide health services;
- public or private nonprofit health or human service agencies that arrange for health services to be provided by another agency or private physicians; and
- public or private nonprofit health or human service agencies that make referrals to health care providers.

The organization that sponsors the program, the personnel who staff it, the location and size of the program, the space available, and the type of food delivery system used may also affect delivery of nutrition education. For example, in most local programs, participants receive vouchers that can be used to buy authorized foods at local grocery stores. Vouchers are issued through the local agency at regular intervals, and participants must visit the agency to receive them. These visits offer opportunities for nutrition education contacts. In other agencies, the food package is delivered to the participant's home or is picked up from a warehouse, so that opportunities for additional nutrition education contacts may be limited.

#### Program Implementation

Implementation of the nutrition education program may be accomplished through group or individual sessions. The choice of one over the other may be dictated by the topic or by participant needs but is often constrained by external factors, including the availability of space and staff and the cost of individual vs. group sessions. The use of individual or group sessions may influence both participation and the benefit that participants derive from the

sessions. Other factors also will influence both participation and benefits derived. For example, participants may have child care or transportation problems, sessions may be awkwardly timed or poorly located or information may be hard to assimilate because of language difficulties.

#### Program Outcomes

In order to achieve the program's long-term goals of improved nutritional and health status for participants, the nutrition education component must first bring about changes both in participants' knowledge about the relationship of diet to health and also in attitudes towards and beliefs about their diet and that of their children. These changes are expected to lead to improvement in dietary behavior that will, in time, produce improvements in nutritional and health status. A variety of external factors strongly influence all of these outcomes. Personal attributes of the participant such as age, intelligence, income, food likes and dislikes, food allergies and health status will affect the ability of the program to change both attitudes and behaviors. Family eating practices, the advice of family and friends and the messages conveyed by television and print media compete as influences on both attitudes and dietary behavior.

#### 1.2 Study Background

The WIC Nutrition Education Study has been conducted as part of a Study of WIC Participant and Program Characteristics, which was funded in September 1983 to provide a representative, national WIC data base containing information on programs as well as participants. The data base was designed to include detailed information about the background, health status, and nutrition education services received by eight categories of participants: pregnant women; breastfeeding women; postpartum, nonbreastfeeding women; infants; and children by age (one, two, three, and four years). The data base also was planned to include extensive information about State and local program operations, especially in the area of nutrition education.

To design the study, Ebon Research Systems and its subcontractor, Abt Associates, assessed data availability in four states, developed instruments and conducted a field test in six local agencies. After receiving study clearance from OMB, Ebon then implemented a nationwide data collection

effort. Questionnaires that documented program operations were mailed to 28 State and 193 local agency directors in June 1984. Particular emphasis was placed on information concerning the nutrition education component of WIC, which was extensively documented through a questionnaire that was sent to local agency/service site Nutrition Education Coordinators.

Information about WIC participants was obtained by randomly sampling 6444 participant files in 356 service sites that are operated by the selected local agencies. This field effort, which took place between August 13 and December 10, 1984, was undertaken by 43 data collectors and nine field supervisors who were hired and trained especially for the task. Data collectors reviewed files and extracted data on participant background, health status, food package prescription and nutrition education.

The WIC Participant and Program Characteristics Study data have been computerized, edited and organized into a data base, which will be maintained at the Washington Computer Center. The data base is intended for continuing use by FNS personnel, who must respond to many political and programmatic questions concerning the WIC program. Project staff, however, were responsible for conducting initial analyses of the data. In particular, analyses that focus on the nutrition education component of WIC were undertaken by staff at Abt Associates.

The report that follows presents descriptive and relational information on WIC program elements and program implementation. The design of the WIC Participant and Program Characteristics Study, however, cannot support inferences about program outcomes or about the effectiveness of WIC nutrition education. Thus, while this report provides findings on nutrition education policies and practices, the number of contacts received, length and content of sessions, etc., it does not attempt to assess the quality or effectiveness of nutrition education services.

## 2.0 METHODOLOGY

The Study of WIC Participant and Program Characteristics has addressed several important methodological issues that affect ultimate study results. One of the most important issues concerns sampling procedures: how to obtain a nationally representative sample of participants given the wide variety of methods used to record participation. Another methodological issue involves data sources: how to document systematically the processes used to deliver nutrition education and the information recorded in participant records. This issue, in turn, presents a third issue: given certain data limitations, how should results be interpreted? A final issue is the analytic approach: how to construct variables that reflect what is happening in WIC.

### 2.1 Study Sample

The WIC program functions primarily at five levels:

- Federal Agency (USDA/FNS)
- State WIC Agency,
- local WIC agency,
- local WIC service site (clinic), and
- WIC participant.

To obtain a representative sample of each of these levels, a stratified multi-stage cluster sample was adopted. This sample, which is nationally generalizable, was designed in four stages as follows:

- Select 26 states with probability proportional to size, where size is measured by total WIC participation in each state (women plus infants plus children);
- Select 200 local WIC agencies from each of the selected states with probability proportional to size;
- Select a sample of about 400 local service sites;
- Select a sample of approximately 6400 participants from the local service sites divided among eight groups-- pregnant women, nonbreastfeeding and breastfeeding postpartum women, infants and children 1, 2, 3 and 4 years of age.

When local agencies were contacted about the study, it was discovered that two of the local agencies--one in Arizona and one in Oklahoma--also functioned as State Agencies for Indian Tribal Nations. It also was learned that in the state of Louisiana, one local agency is responsible for all local programs (eight of which had been selected for the study). Thus, in the final sample, there are 28 State Agencies and 193 local agencies. Given the selection procedures, these agencies constitute a nationally representative sample of WIC programs.

Because many WIC programs provide services to clients at a variety of locations, it was necessary to select a maximum of two service sites per local agency for study participation. If a local agency also provided services at its location, it was selected as the first service site. Otherwise, service sites were randomly selected (with equal probabilities). The final sample includes 356 service sites.

The last stage of sampling involved selecting participants from local agencies. Because the program tailors food packages, nutrition education and health services to address the needs of the different participant groups, it was important that each major group be represented with a sample adequate to make accurate projections. Eight distinct participant groups were identified: pregnant women; breastfeeding women; postpartum, nonbreastfeeding women; infants; and children aged one, two, three, and four. These eight groups were represented as distinct strata for sampling purposes to ensure that an adequate number of each group was selected.

At each service site, data collectors randomly selected participant files for data extraction. Staff were extensively trained in these sampling procedures. First, they were instructed to use a random number table to select a file drawer and a starting point within the drawer. Based on estimated caseload, they calculated a sampling interval specified to ensure that all participant files would be eligible for the sample. Files were then sampled systematically by selecting every "nth" file. The first two files selected in a participant category (three files for pregnant women) were included in the study; a third (fourth) file was also specified as a backup file. Subsequent files were tallied by category until all categories had been filled, or until a minimum of 100 files had been tallied. The resulting tallies were used to estimate the proportion of participants in each category

at the service site and to estimate participant-level sampling weights for inclusion on the data base. Table 2.1 shows how the final participant sample was distributed.

Table 2.1  
WIC Participant Sample Distribution

<u>WIC Groups</u>	<u>Number in National Sample</u>	<u>Number Sampled per Local Agency</u>	<u>Number Sampled per Service Site (2 sites)</u>
Women	2524	14	7
Pregnant Women	1181	6	3
Breastfeeding Women	761	4	2
Postpartum, Non- Breastfeeding Women	582	4	2
Infants	793	4	2
Children	3127	16	8
Children Aged 1-2	779	4	2
Children Aged 2-3	785	4	2
Children Aged 3-4	792	4	2
Children Aged 4-5	<u>771</u>	<u>4</u>	<u>2</u>
Total	6444	34	17

## 2.2 Data Sources

Data on the nutrition education component of WIC were obtained from three sources: State Agencies, local agencies/service sites and participant records. State Agency data were collected as part of a mail survey that was sent to State WIC Directors in June 1984. Topics documented included policies regarding nutrition education, State Agency nutrition education staff, the state role in developing nutrition education materials and in providing training/technical assistance to local agency staff, and state nutrition education expenditures.

The local agency/service site data also were obtained via a mail survey that was sent to local agencies in June 1984. The Nutrition Education Coordinator for each service site included in the sample was asked to complete an extensive questionnaire that included items on nutrition education policies, goals and objectives; topics taught to pregnant, breastfeeding and post-partum/nonbreastfeeding women and (parents or caretakers of) infants and children; nutrition education staff and materials used; settings used to provide nutrition education; training/technical assistance; and perceived constraints to the delivery of nutrition education.

Participant-level data were abstracted from participant files during the on-site data collection that took place from August to December 1984. Data collectors reviewed each file and recorded all topics that had been presented to the participant since certification in the current category (e.g. pregnant woman, infant, child, etc.). The data collector also recorded all dates on which nutrition education had been provided in the current category and the dates on which the participant had refused to participate in a nutrition education session.

From these sources an extensive nutrition education data base has been developed. The data base consists of eight files: a State Agency file, a service site file, five participant files (one for each participant category), and a merged file that includes local agency descriptive data, all service site data, and five items that were aggregated from the participant files: the average number of nutrition education contacts per six months; the percent of sampled participants who were presented topics on (1) WIC, (2) dietary needs/food preparation/meal planning, and (3) special needs (e.g. breastfeeding, infant feeding, growth patterns, etc.); and the percent of sampled participants who were certified as high priority. This merged file provides a basis for examining relationships between local agency/service site characteristics, the process of providing nutrition education, and the type of nutrition education received by participants.

### 2.3 Data Limitations

It should be noted that, although the nutrition education data base contains a large amount of information that is nationally representative of the nutrition education component of WIC, certain items on the data base may

have questionable validity. In particular, two types of data must be considered cautiously. First, the data extracted from participant files reflects only what agency staff recorded. There may be considerable variation in how thoroughly sessions were described and in what was included under general topic areas. Data collector bias also may have affected the validity of data.

Second, preliminary data analyses indicated that the information on nutrition education staff, which was obtained via the service site questionnaire, was not accurately and consistently reported. Several types of problems were identified:

- Some local agencies operate several part-time service sites, using the same core staff. In many instances the hours worked at the service site do not appear to be reported accurately for these staff.
- Larger service sites may not have reported all staff who work on nutrition education because of the problems associated with documenting the background of each provider.
- The service site questionnaire was supposed to be completed by the Nutrition Education Coordinator. A series of questions was included to document the background of the person completing the questionnaire--presumably the coordinator. Since in some instances another staff member completed the questionnaire, data on the coordinator's background may not be accurate.
- It appears that some service sites included the Nutrition Education Coordinator in the section documenting the background of staff, while others did not. Moreover, some service sites may have double reported staff who hold two positions (e.g. nutritionist and nurse).
- Many local agencies did not complete the questionnaire for the second service site, but indicated "same as first service site." Thus, all staffing and classroom information for these service sites may be inaccurate.

Given these problems, information about staff background and staffing patterns must be used with caution. Although in many instances only small random errors will be introduced, there may be a considerable bias related to the size of the local agency, the size of the service site, and/or the accuracy of the second questionnaire filled out.

## 2.4 Analytic Approach

The primary focus of the nutrition education data analysis has been to describe the nutrition education component of WIC. Much of the data collected consists of lists of topics presented, materials used, types of sessions offered, etc. This information has been described by presenting frequency tables. Other information involves a continuous variable such as the number of hours worked, the length of a session, or the percent of staff who are nutritionists. These data have been summarized by generating medians, means, standard deviations, minimums and maximums.

To describe the nutrition education staff, the average level of education, experience, and hours worked on WIC and on nutrition education were calculated for each service site using the items reported for each staff member. In addition, the proportion of staff in specified job roles and with specified credentials was estimated by counting staff with each role/credential and dividing by the total number of staff reported. Where missing data were encountered, the staff member was omitted from the calculation.

To examine relationships between local agency characteristics, nutrition education processes and the nutrition education received by participants, four types of analyses have been undertaken. First, for categorical variables, contingency tables (crosstabs) have been generated. Second, for continuous dependent variables (e.g. nutrition education contacts per six months) and categorical independent variables (e.g. type of session offered), an analysis of variance has been used. Third, regression analyses have been undertaken to relate both categorical and continuous independent variables to continuous dependent variables. In these analyses the presence or absence of categorical variables has been indicated by the use of dummy variables. Finally, to describe the various models that are used by WIC programs to deliver nutrition education, a factor analysis with a varimax rotation was undertaken.

One of the major dependent variables used in the analyses is the number of nutrition education contacts received by participants. This information was abstracted from participant records and represents the total number of contacts received since the participant was certified in the current participant category. However, since the sample consists of active participants only, this estimate does not, in most instances, reflect the number of con-

tacts that will have been received by the end of the current certification period. Moreover, since most participants receive nutrition education at certification, any estimate of the number of contacts per certification or per a given time period will be inflated for participants who have been on WIC for only a short time. This bias is illustrated in the graphs provided in Figure 2, which shows the estimated number of contacts per six months [(total number contacts/total months on WIC) x 6] and Figure 3, which provides the total number of contacts received, by number of months on WIC, for the five major participant categories (pregnant, breastfeeding and postpartum/nonbreastfeeding women; infants; and children).

One potential solution for this bias is to include only those participants who have been on WIC for six months. This approach, however, will eliminate almost half the sample (all postpartum women and all but 235 pregnant women, 228 breastfeeding women, 287 infants, and 2346 children). Moreover, since this subsample is dominated by children, results will represent primarily the nutrition education contacts received by children. As is illustrated in Figures 4 and 5, the number of contacts that children receive declines over time. Thus this approach may seriously underestimate the number of contacts received during early WIC participation.

To provide a reasonable estimate of the number of nutrition education contacts provided by service sites, participant-level data were aggregated and adjusted at the service site level using the following formula:

$$\text{Estimated contacts} = 1 + \frac{5}{\frac{\sum_{i=1}^p (m_i - c_i)}{\sum_{i=1}^p (m_i - c_i)}} \left[ \sum_{i=1}^p (n_i - c_i) \right],$$

where  $m_i$  = months on WIC for participant  $i$

$c_i$  = number of certifications for participant  $i$

$n_i$  = number of contacts received by participant  $i$

$p$  = number of participants sampled at the service site.

This formula assumes that participants receive nutrition education at each certification (represented by the "1") plus additional contacts during the next five months. Since a participant who has been on WIC for only one month

## NUTRITION EDUCATION CONTACTS PER 6 MOS.

Figure 2

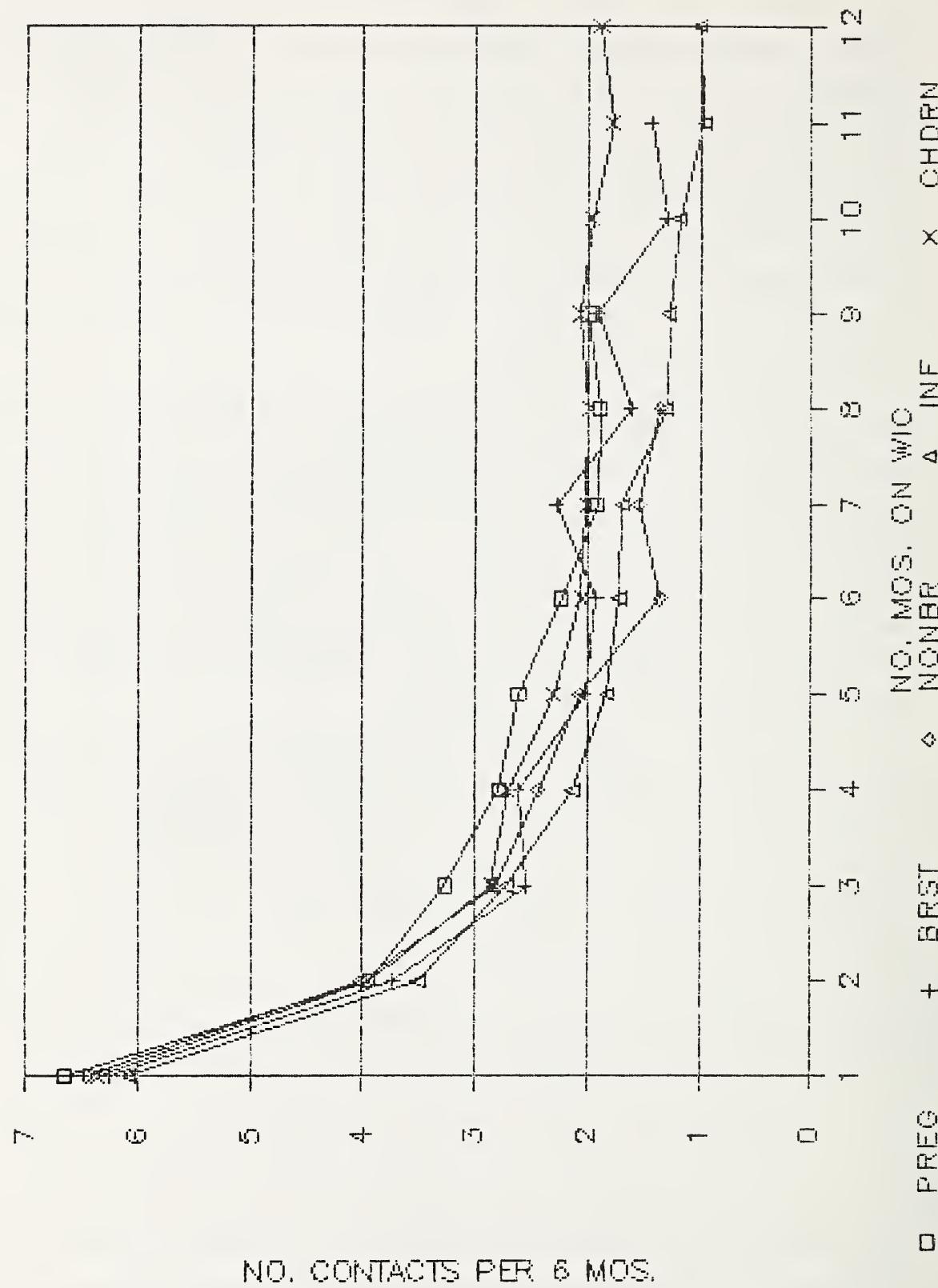


Figure 3

TOTAL NUTRITION EDUCATION CONTACTS

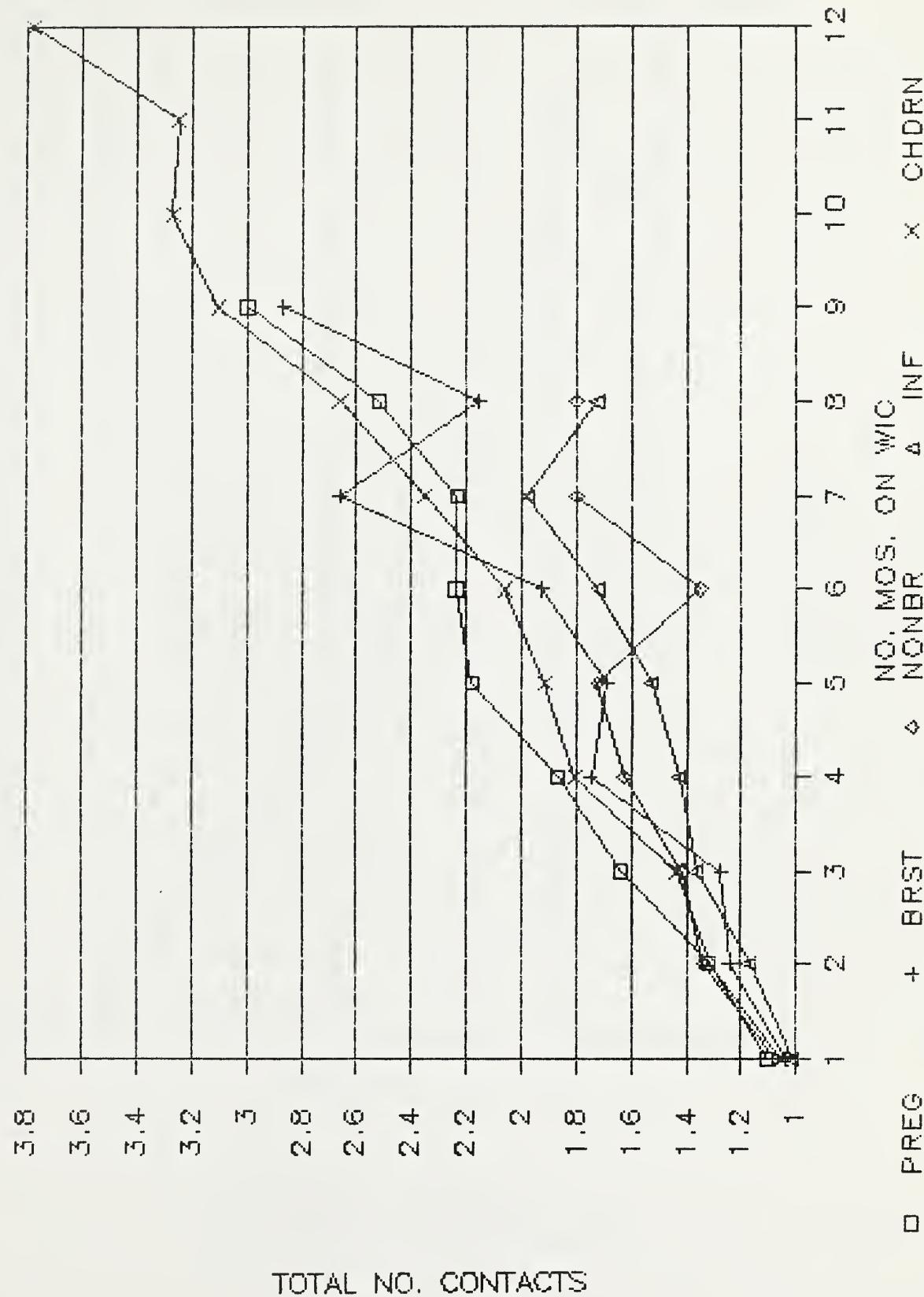


Figure 5

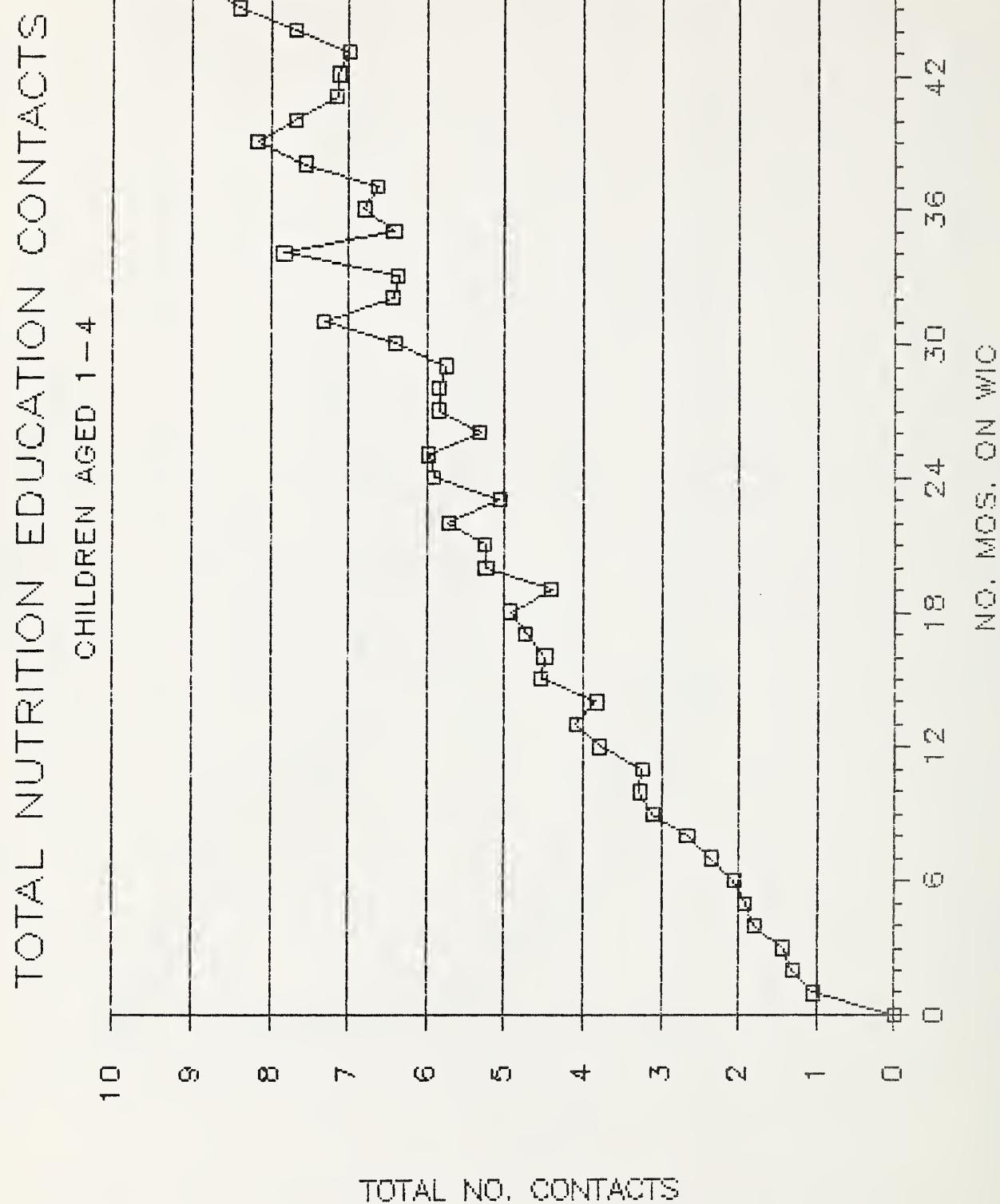
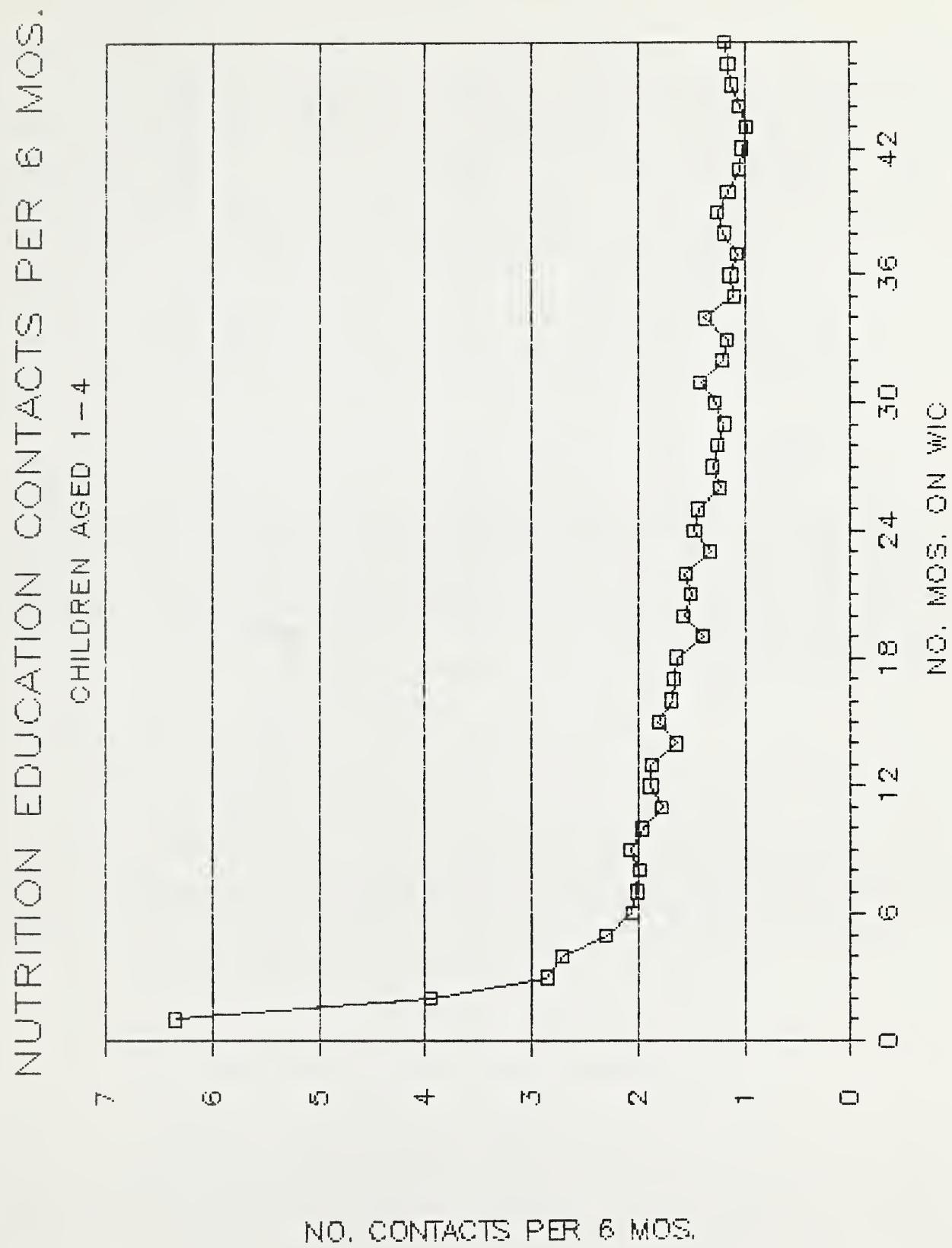


Figure 4



provides only one sixth as much information about additional contacts as does a participant who has been on the program for six months, the formula more heavily weights the followup information for participants who have been on WIC longer. To provide a figure that is comparable across participant categories, the formula is based on a six month period, which is the specified certification time for all participants except pregnant women (who are certified until six weeks after delivery). Thus, the formula estimates the number of contacts that the service sites provide per six months rather than per certification.

The correction formula will yield a reasonable estimate when applied across a sample of participants. For an individual participant, however, it is not possible to estimate accurately the number of contacts that will be received. Therefore, for the participant-level analyses reported in Chapter 5, comparisons between contacts received by various types of participants (poverty status, race, etc.) were based on the uncorrected variable "number of contacts per month on WIC." Given the bias described above, this variable must not be used as a basis for estimating the total number of contacts received per certification.

### 3.0 THE STATE AGENCY ROLE IN NUTRITION EDUCATION

State agencies function to implement and oversee WIC program operations. Usually these agencies are placed under the administration of the State Department of Health or a bureau of nutrition. The offices, which are usually staffed with respected members in the field of public health nutrition, are recognized clearinghouses for information and materials on maternal and child nutrition. State agencies include geographic states, the District of Columbia, Puerto Rico, Guam, the Virgin Islands and 31 Indian tribes or tribal associations. Although two Indian State agencies were in the sample, these results should be considered primarily indicative of geographic State agencies.

State Agencies fund and oversee a number of local agencies, which certify participants, supply supplemental foods and provide nutrition education. The State Agency has the authority to decide which local agencies are funded and to specify local agency reporting requirements, within Federal guidelines. The State Agency also must provide training and technical assistance to local agency staff. There is, however, considerable variability in the ways that State Agencies manage their local programs. This chapter describes the role that State Agencies have with respect to administering the nutrition education component of WIC at the local level.

Data for the analyses that follow were obtained from the mail survey that was sent to 28 State Agencies in June 1984. One section in the survey instrument sought information about nutrition education. This section, which was to be completed by the State Nutrition Education Coordinator, contained questions about the State Agency's role in nutrition education, including:

- policies that affect local agencies
- state-level nutrition education staff
- development of nutrition education materials
- training and technical assistance
- nutrition education expenditures

Findings from the survey are summarized below.

### 3.1 Nutrition Education Policies

As the overall management unit for the WIC Program at the state level, State Agencies must develop annual plans in which goals, objectives and action plans for the upcoming year are described. State Plans are prepared and submitted to FNS in August. A description of the operation of the nutrition education component appears in each plan. The State Plan incorporates much of the policy affecting delivery of nutrition education at the local level. As specified by the Federal guidelines at the time of the study, a few of the components of a State Plan are:

- methods to focus on high risk participants
- plans to coordinate services with the Expanded Food and Nutrition Education Program
- methods to reach and accommodate special groups

Information presented in State Plans is clearly specified by the Federal guidelines. Thus, the mail survey was designed to capture more detailed information about nutrition education at the State level. Of special interest are State nutrition education policies.

State Agencies are allowed a certain degree of latitude for setting nutrition education policy. For example, the Federal guidelines specify a minimum number of nutrition education contacts. As long as the minimum requirements are met, the State Agency may set a policy that allows for more contacts than are required at the federal level.

State agencies were asked three questions concerning their role in setting nutrition education policies. These questions concerned the number of nutrition education contacts required per certification, the State's role in specifying nutrition education curriculum, and the conduct of surveys about participant satisfaction with the nutrition education provided. Responses to these questions are provided in Tables 3.1.1 and A.1, Appendix A.

At the time of the survey, Federal regulations required that each participant receive a minimum of two nutrition education contacts per certification. However, 14 percent (4) of the sampled states have requirements that exceed the Federal regulations. For three of those states, policies require that nutrition education be provided at each WIC visit; two states responded only that more than two contacts per certification are required.

TABLE 3.1.1  
STATE AGENCY NUTRITION EDUCATION POLICIES

NUTRITION EDUCATION POLICY	STUDY STATE AGENCIES WITH POLICY
<u>Contacts Per Certification</u>	
Exceeds Federal Regulations	14% (4)
Nutrition education required at each visit	10% (3)
Nutrition education required more than twice	7% (2)
<u>Curriculum</u>	
Use Standardized Curriculum	32%
Require LA's to use	25%
<u>Participant Satisfaction Surveys</u>	
Percent Conducting Surveys	
1983	57%
1984	77%
-----	
Avg. LA's Surveyed	<u>MEAN</u> <u>MEDIAN</u>
1983	40            24
1984	45            26
Avg. # Participants Surveyed	
1983	3105        895
1984	5420        1557

Current and prior Federal regulations specify that States identify or develop nutrition education resources and materials, but a standardized nutrition education curriculum is not required. Nonetheless, 32 percent of State Agencies in the survey use a standardized curriculum, and 25 percent of that number require their local agencies to use that curriculum.

Current and prior Federal regulations also require that States annually conduct evaluations of nutrition education activities, including an assessment of participant satisfaction with nutrition education. Only 57 percent of the States conducted satisfaction surveys in 1983, but 77 percent conducted such surveys in 1984. When surveys were conducted, the sample included an average of 40 local agencies and 3,105 participants in 1983, and 45 local agencies and 5,420 participants in 1984. In 1983 the median number of local agencies and participants was 24 and 895, respectively; in 1984, these medians were 26 local agencies and 1557 participants.

### 3.2 Nutrition Education Staff

There is considerable variation in how the WIC program functions at the State level. Although Federal guidelines provide a basis for staffing the State Agency, the nature of the WIC program allows for a number of important choices for State-level program administration. The Federal guidelines provide specifications for staffing at the State level that depend on the number of participants served. These guidelines, however, do not specify how many nutrition education professionals should be employed. The level of education and credentials of the State Nutrition Coordinator are clearly spelled out. Beyond this level, though, the State has been delegated considerable freedom to set its own staffing policy.

As part of the mail survey, State Agencies were asked to report the educational background of all nutrition education professionals employed by the State WIC program. In addition, they were asked to specify job titles and hours worked, both on WIC and on nutrition education. Results are summarized in Tables 3.2.1 and 3.2.2; additional detail is provided in Table A.2 and A.3 in Appendix A.

Current and prior Federal regulations indicate that the State WIC Nutrition Coordinator, who is usually the Nutrition Education Coordinator, have at least a college degree with emphasis on food/nutrition or meet the IHS

TABLE 3.2.1  
STATE AGENCY NUTRITION EDUCATION PROVIDER BACKGROUND

BACKGROUND CHARACTERISTICS	NUTRITION EDUCATION COORDINATOR	NUTRITION EDUCATION STAFF
<u>Educational Level</u>		
Bachelor's degree	11%	16%
Master's degree	71%	70%
Doctoral degree	14%	11%
<u>Type of Education</u>		
Nutritionist/Dietetics	89%*	64%
Nursing/Public Health	18%*	12%
Home Economics	4%	14%
Other	4%	13%

\*18 percent have a degree in both nutrition and nursing/public health.

TABLE 3.2.2  
STATE AGENCY NUTRITION EDUCATION STAFFING PATTERNS  
(n = 28)

STAFFING PATTERN	MEAN	MEDIAN
Hours Worked:		
All Staff (Avg.)		
WIC	34.1 hrs.	35.0 hrs.
Nutrition Education	20.5 hrs.	18.1 hrs
% Time on Nutrition Education	60.5%	35.0%
Coordinator		
WIC	37.5 hrs.	40.0 hrs.
Nutrition Education	29.7 hrs.	35.0 hrs.
% Time on Nutrition Education	80.4%	97.2%
Staff Composition		
% Supervisors	37.4%	29.2%
% Nutritionists	38.8%	29.2%
% Nurses	13.7%	0%
% Training Coordinator	2.2%	0%
% Food Package/Certification Specialists	1.8%	0%
% Other	6.1%	0%
Number of FTE Nutrition Education Staff	1.8 staff	1.3 staff
Number of Participants Per FTE Nutrition Education Staff	63,669 participants	49,351 participants

standards for a Public Health Nutritionist, plus at least three years of relevant experience. Survey results indicate that 96 percent of all Nutrition Education Coordinators hold at least a Bachelor's degree, 71 percent hold a Master's degree and 14 percent hold a Doctoral degree. Only 89 percent of coordinators, however, have a background in nutrition or dietetics. The other portion specialized in nursing, home economics or some other area such as education or social service.

Including the Nutrition Education Coordinator, State Agencies have an average of 1.8 full-time-equivalent (FTE) nutrition education professionals.\* Most staff hold at least a Bachelor's degree, and 81 percent hold a graduate degree. Sixty-four percent of these professionals have specialized in food, nutrition or dietetics. Other areas of specialty include nursing and home economics.

State Nutrition Education professionals work an average of 34.1 hours per week for WIC, of which 20.5 hours are spent on nutrition education; the Nutrition Education Coordinator works 37.5 hours per week for WIC and spends 29.7 hours on nutrition education. Over one third of the staff (37.4 %) are supervisors, nearly 39 percent hold the title of nutritionist, 14 percent are nurses, two percent are training coordinators, two percent are food package/certification specialists and six percent have another job title. Across all groups, there are 63,669 participants for each FTE nutrition educator. The average nutrition education staff member spends 34 percent of WIC time on nutrition education, while the Coordinator works on nutrition education activities over 80 percent of the time.

### 3.3 Nutrition Education Materials

The Federal regulations require States to "identify or develop resources and educational materials for use in local agencies." Survey results (Table 3.3.1 and Tables A.4 and A.5 in Appendix A) indicate that 96 percent of State Agencies develop or adapt nutrition education materials. The most frequently reported reasons for developing materials are that existing mater-

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\*One FTE nutrition educator represents 40 hours per week worked on nutrition education, not 40 hours per week worked on WIC. Since the survey instrument requested information only for WIC staff who were involved in nutrition education, accurate information on FTE WIC staff is not available.

TABLE 3.3.1  
STATE AGENCY NUTRITION EDUCATION  
MATERIALS DEVELOPMENT

APPROACH	PERCENT OF STUDY STATE AGENCIES WITH APPROACH
<u>Develop Materials?</u>	
No	4%
Yes	96%
<u>Most Important Reason for Developing Materials</u>	
Materials must be Adapted to Address Special Client Characteristics	33%
Materials must be Adapted to Reflect State Agency Philosophy	30%
Information is Unavailable Elsewhere	19%
<u>Most Frequently Developed Materials</u>	
Pamphlets/Brochures	67%
One-Page Fact Sheets	15%
Slides/Filmstrips	7%
<u>Most Frequently Adapted Materials</u>	
Pamphlets/Brochures	59%
Slides/Filmstrips	7%
Posters	7%

ials must be adapted to reflect State Agency policy or to address special client characteristics. Also mentioned was that information is unavailable elsewhere.

The only frequently developed/adapted materials are pamphlets and brochures. However, some agencies also develop/adapt one-page fact sheets, slides/filmstrips and flip charts. Posters are adapted by two State Agencies.

All State Agencies surveyed obtain nutrition education materials from other sources (see Table 3.3.2 and Tables A.6 and A.7 in Appendix A). The most important sources of materials for use by participants are local WIC agencies and the food industry or private companies. The least often used sources for these participant materials are universities and local non-WIC agencies.

All State Agencies responding to the survey obtain materials for staff use from health and professional organizations; moreover, these organizations are the primary source of staff materials (Table 3.3.2). Other primary sources include FNS and local WIC agencies. The least frequently used source for staff materials is local, non-WIC agencies.

Eighty-six percent of State Agencies have a method for evaluating the nutrition education materials that they use (Table 3.3.3; Tables A.8 and A.9, Appendix A). Of these, over 40 percent are States that use a standard form or checklist for the evaluation. The most frequently cited criteria that are used in the evaluation are reading level and appropriateness for the target population. Also frequently mentioned were subject matter and visual appeal. State Agency staff primarily use the evaluation results to recommend materials or to purchase materials in order to provide them free to local agencies.

### 3.4 Nutrition Education Training and Technical Assistance

An important function of State Agencies is the provision of in-service training for local agency professional and paraprofessional staff involved in nutrition education. Often the in-service training focuses attention on specific areas of policy such as the promotion of breastfeeding. Training may be designed to provide staff with important teaching tools or current information.

All State Agencies surveyed responded that they comply with the requirement. In both FY 1983 and FY 1984, training and technical assistance

TABLE 3.3.2  
SOURCES OF NUTRITION EDUCATION MATERIALS

SOURCE	PERCENT OF STUDY AGENCIES
<u>For Participants</u>	
Primary Sources:	
WIC Agency	21% ranking first
Food Industry/Private Company	18% ranking first
State, non-WIC Agency	14% ranking first
Least Used Sources:	
Local, non-WIC Agency	18% never using
University	14% never using
<u>For Staff</u>	
Primary Sources:	
Health/Professional Organizations	50% ranking first
FNS-WIC	11% ranking first
Local WIC Agency	11% ranking first
Least Used Sources:	
Local, non-WIC Agency	21% never using
Local, WIC Agency*	11% never using

\*The local WIC agency, although reported as the primary source of materials by 11 percent of responding State Agencies, also was indicated as "never used" by 11 percent of responding agencies.

TABLE 3.3.3  
 STATE AGENCY EVALUATION  
 OF NUTRITION EDUCATION MATERIALS  
 (n = 28)

MATERIALS EVALUATION POLICY	PERCENT OF STUDY STATE AGENCIES WITH POLICY
<u>Method for Evaluating Materials?</u>	
Yes	86%
No	14%
<u>Use Standard Form?</u>	
Yes	42%
No	58%
<u>Evaluation Criteria</u>	
Reading Level	100%
Appropriateness for Target Audience	100%
Subject Matter	96%
Visual Appeal	92%
<u>Methods Used to Inform Local Agencies</u>	
Recommended materials to Local Agencies	92%
Purchase materials and provide them to Local Agencies	83%

(T/TA) was most often given by nonsupervisory staff, who provided nearly 70 days of T/TA in FY 1983 and 68 days in FY 1984 (see Table 3.4.1 and Table A.10 in Appendix A).

State Agencies frequently pay for local agency staff to attend professional meetings or conventions. This is a means for meeting the inservice training/technical assistance requirement. In FY 1983, there were an average of 395 paid staff days spent attending meetings for this purpose. In FY 1984, the average was 400 paid staff days.

Since State Agencies with large WIC programs have to provide more total T/TA than those agencies with smaller programs, the average number of days spent per local agency also has been computed. In FY 1983 staff spent approximately 14.5 days giving T/TA to local agencies, while in FY 1984 only 5 staff days were spent per local agency. Moreover, in FY 1983 considerably more paid staff days were spent attending professional meetings (72.4 per local agency) than in FY 1984 (25.3 days per local agency).

It is important to add a word of caution to the interpretation of these figures. An inspection of the medians and ranges reported in Table A.8, Appendix A, shows the extent to which the means reported are influenced by several large outliers. This is particularly evident in the FY 1983 figures. The fact that two relatively large states did not report data for FY 1984 may also have reduced the means for that year. Thus it must not be concluded that less T/TA was provided in FY 1984.

### 3.5 Nutrition Education Expenditures

Federal regulations specify that nutrition education expenditures should amount to at least one-sixth of the total administrative budget. Reported expenditures of State Agencies in the sample averaged \$988,936 in FY 1983 (see Table 3.5.1 and Table A.11 in Appendix A). In the next fiscal year, the average was \$1,012,633. Since States were not asked to report their total administrative budget, the percent of administrative money spent on nutrition education cannot be estimated for this report.

Of the total expenditures in FY 1983, seven percent of the nutrition education budget was spent on nutrition education materials. In the next year the portion spent on materials represented 12 percent of the total amount.

TABLE 3.4.1  
STATE AGENCY PROVISION OF  
TRAINING AND TECHNICAL ASSISTANCE (T/TA)

	TOTAL DAYS PROVIDED		DAYS SPENT PER LOCAL AGENCY	
	Mean	Median	Mean	Median
State WIC Director				
FY 1983	4.2	0	1.2	0
FY 1984	2.4	0	0.6	0
State Nutrition Education Coordinator				
FY 1983	26.2	12.5	3.7	0.4
FY 1984	27.3	12.0	2.4	0.5
Outside Consultants				
FY 1983	2.8	0	0.5	0
FY 1984	3.4	2	0.5	0.1
Other Staff				
FY 1983	69.8	10.5	9.1	0.3
FY 1984	67.9	21.5	1.5	0.5
Professional Meeting				
FY 1983	395	185	72.4	6.2
FY 1984	400	300	25.3	8.3

FY 1983 n = 28

FY 1984 n = 26

TABLE 3.5.1

## STATE AGENCY EXPENDITURES ON NUTRITION EDUCATION

	FY 1983 (n=28)		FY 1984 (n=26)	
	Mean	Median	Mean	Median
Average Nutrition Education Budget	\$988,936	\$844,035	\$1,012,633	\$930,405
Average Nutrition Education Budget Per Local Agency	61,036	27,594	41,908	25,646
Average Expenditures on Nutrition Education Materials	76,850	18,167	127,224	22,411
Average Expenditures on NE Materials Per Local Agency	2,228	842	3,892	823

#### 4.0 THE PROVISION OF NUTRITION EDUCATION TO PARTICIPANTS

Most participants receive nutrition education when they are certified, when they pick up their food vouchers, and/or when they have a medical appointment at a service clinic. Although these activities may occur at the local agency, they also frequently take place at another location (or service site). Thus, to document nutrition education for the WIC Participant and Program Characteristics Study, the local agency Nutrition Education Coordinator was asked to complete a detailed questionnaire about the delivery of nutrition education at each of the service sites included in the study. This questionnaire contained items on goals and objectives, specific topics taught, materials used, training/technical assistance, participant satisfaction surveys, settings in which nutrition education is provided, and the staff who provided nutrition education. Descriptive results based on this extensive data base are presented below.

##### 4.1 Local Agency Policies, Goals and Objectives

The importance of nutrition education in the WIC Program is emphasized through the requirement that each local agency prepare an annual Nutrition Education Plan. A major objective of this plan is to help the local agency staff identify and focus on their most important goals for nutrition education. The plan also includes an assessment of facilities and resources, including staff resources. The Nutrition Education Plan must parallel the annual State Plan in terms of overall State policies and goals. The year's planned budget for nutrition education as well as a description of sources for anticipated financial needs is included. Often these plans include descriptions of methods aimed toward utilizing the services of the Expanded Food and Nutrition Education Program (EFNEP) or other community resources.

As part of the survey, the local agency Nutrition Education Coordinator was asked to describe, in open-ended format, the three most important goals that the local agency has set for information/content taught and for knowledge, attitudes, or behavior change. Responses were postcoded to reflect several overall categories. The results of this effort are summarized in Table 4.1.1 and in Tables B.1 to B.2 in Appendix B.

Local agency goals for information/content taught reflect the intent to teach basic nutrition to all participants. Over a quarter of the sample

TABLE 4.1.1  
LOCAL AGENCY/SERVICE SITE GOALS FOR NUTRITION EDUCATION

MOST IMPORTANT GOAL	PERCENT OF STUDY SERVICE SITES WITH GOAL
INFORMATION OR CONTENT TAUGHT (n=316)	
Teach basic nutrition to all	28%
Special topic areas	21%
Develop/improve nutrition education	18%
Teach basic nutrition to women	12%
KNOWLEDGE, ATTITUDES, BEHAVIOR CHANGE (n=315)	
Observe/document change in nutritional practice	33%
Observe/document change in nutrition/health knowledge	21%
Improve educational service	20%
Observe/document change in attitudes	10%

(28%) identified this as the most important information goal. Other responses involved focusing on special topics (21%), developing or improving nutrition education (18%), and teaching basic nutrition to women (12%).

Asked about goals that focus on knowledge, attitudes and practices, over a third of Nutrition Education Coordinators responded that they had set a goal to bring about changes in dietary practices that could be observed or documented. This response indicates that many of the nutrition education programs at the local level are focused on changes in health or nutrition behavior.

Nutrition Education Coordinators also were asked about their local agency nutrition education policies in three areas: contacts required per certification, use of standardized curricula, and conduct of participant satisfaction surveys. These results are presented in Table 4.1.2 and Table B.3, Appendix B.

Twenty-six percent of service sites are associated with local agencies that specify more nutrition education contacts per certification than the minimum set by the State. Over a third of the service sites in the sample are provided with a standardized nutrition education curriculum by the State Agency. Of these service sites, 10 percent are required to use the curriculum. More service sites (28%) are allowed to alter the standardized curriculum than actual do change it (25%). Over half the service sites in the sample have their own standardized curriculum.

The majority of service sites (55%) are operated by local agencies that conduct participant satisfaction surveys. For 73 percent of these, surveys are conducted annually, and for eight percent they are conducted monthly. An average of 150 participants were included in surveys in FY 1983.

Another important role for nutrition educators is to promote and support breastfeeding. The Nutrition Education Coordinators were asked to indicate all of the methods that they used to support pregnant and breastfeeding women in this effort and to rank the two most important methods. Results are presented in Tables 4.1.3 and B.4, Appendix B.

Breastfeeding is most often promoted by supplying women with pamphlets during a discussion about breastfeeding (92%) and by providing individual counseling at the WIC service site. These two methods also were ranked as the most important methods. The least frequently used methods involve operating a

TABLE 4.1.2

## LOCAL AGENCY POLICIES CONCERNING NUTRITION EDUCATION

POLICY	PERCENT OF SAMPLE SERVICE SITES WITH POLICY
<u>Contacts Per Certification</u>	
Number of contacts per certification differs from that set by State:	
No	74%
Yes	26%
<u>Curriculum</u>	
Standardized nutrition education curriculum is available:	
No	60%
Yes	36%
Don't know	4%
Required to use curriculum	10%
Permitted to alter curriculum	28%
Do alter curriculum	25%
Use own nutrition education curriculum	55%
<u>Participant Satisfaction Surveys</u>	
Local agency conducts locally generated surveys	
No	45%
Yes	55%
Surveys conducted:	
Once per participant	<1%
Monthly	3%
Every six months	8%
Annually	73%
Biannually	6%
Other	9%
# Participants Surveyed in FY 1983	

TABLE 4.1.3  
METHODS USED TO PROMOTE BREASTFEEDING  
(n=314)

METHOD	% OF SERVICE SITES USING METHOD	% OF PARTICIPANTS IN SERVICE SITES RANKING METHOD FIRST
<b><u>Most Frequently Used Methods</u></b>		
Distributes specific pamphlets on breastfeeding <u>with</u> provider information	92%	27%
Provides individual counseling on breastfeeding at WIC service site	88%	43%
Makes referrals to support group or hotline	60%	--
<b><u>Least Frequently Used Methods</u></b>		
Operates a WIC breastfeeding hotline	5%	--
Individual counseling on breastfeeding provided at hospital after delivery	6%	1%
Shows audiovisuals on breastfeeding to participant <u>without</u> provider interpretation	11%	--

WIC hotline (5%) and counseling new mothers at the hospital (6%). The majority of service sites presented pamphlets, films, etc. only with interpretation from the nutrition education provider.

#### 4.2 Nutrition Education Staff

Since many local agencies provide a variety of health care services in addition to services offered through WIC, the nutrition education component provides the nutritionist and/or health care provider the opportunity to integrate nutrition education within the framework of an individual's overall health care. This is, in fact, one of the most important responsibilities of local agencies.

Nutrition education, either through counseling or via group sessions, is planned according to the individual's particular needs. For example, a pregnant woman has both special nutrition and health needs. These needs are stressed through nutrition education contacts as well as through health care. Nutrition-related health problems such as anemia, inadequate or excessive weight gain and gastrointestinal problems not only become the focus for her health care but can also become a point in discussion of her nutritional needs. The relationship between diet and health is emphasized through this integrated approach far more effectively than in approaches that encompass only health care services.

The nutrition education staff hold the responsibility for planning and delivering nutrition education services to WIC clients. Their commitment to this component and their qualifications are determined by the State and local agencies. The Nutrition Education Coordinator survey included a number of questions that were designed to capture some basic information about staffing at the local level.

Local agency Nutrition Education Coordinators were asked to report the job titles, hours worked, education and experience of all staff who provided nutrition education at the selected service sites. In addition, they were asked to provide these data separately for themselves. As noted in Section 2.2, there appears to be considerable variability in the accuracy of the data reported, especially for staff at the second service site. Results are summarized in Tables 4.2.1 and 4.2.2; detailed information is provided in Tables B.5 and B.6.

TABLE 4.2.1  
SERVICE SITE NUTRITION EDUCATION PROVIDER BACKGROUND

BACKGROUND CHARACTERISTICS	NUTRITION EDUCATION COORDINATOR	NUTRITION EDUCATION STAFF
	Percent	Percent
<u>Educational Level</u>		
High school graduate	--	11%
Post high school, no college degree	3%	27%
Bachelor's degree	49%	45%
Master's degree	43%	18%
Doctoral degree	3%	<1%
<u>Type of Education</u>		
Registered Dietician	60%	23%
Nutritionist/Dietician	30%	25%
Registered Nurse	5%	19%
Other Public Health	7%	4%
Paraprofessional	--	25%
<u>Experience</u>		
< 1 year	<1%	11%
1-5 years	34%	50%
> 5 years	65%	37%
<u>Staff Composition</u>		
Supervisors	--	9%
Nutritionists/Dieticians	--	44%
Nurses	--	22%
Technicians	--	16%
Clerical Staff	--	8%

TABLE 4.2.2

SERVICE SITE NUTRITION EDUCATION STAFFING PATTERNS\*  
(n = 314)

STAFFING PATTERN	MEDIAN	MEAN
<u>All Nutrition Education Staff</u>		
Hours on WIC	30.0	24.8
Hours on Nutrition Education	12.5	13.9
% Time on Nutrition Education	60.0%	60.0%
<u>Nutrition Education Coordinator</u>		
Hours on WIC	37.0	33.7
Hours on Nutrition Education	21.0	22.5
% Time on Nutrition Education	75.0%	67.0%
Number of FTE Nutrition Education Staff	0.9	1.2
Number of Participants Per FTE Nutrition Education Staff	800	1308

\*Represents only service site 1.

In virtually all local agencies (97%) the Nutrition Education Coordinator has graduated from college (Table 4.2.1). Over 60 percent of the nutrition education staff also hold college degrees. All coordinators have specialized either in nutrition/home economics or in a health-related field; three quarters of nutrition education staff also have specialized in one of these areas. Nutrition education staff as well as Nutrition Education Coordinators generally have at least one year of experience providing nutrition education. Nearly two thirds of the Coordinators have five or more years of experience, and 41 percent of the staff have experience of more than five years.

Nearly half of all service site nutrition education staff work as nutritionists, dietitians or home economists. Over 20 percent are nurses, public health workers, or social workers. Only nine percent are considered supervisors, 16 percent are technicians, and eight percent are clerical staff.

Nutrition education staff, on average, work 25 hours per week for WIC and spend more than half of this time (14 hours) providing nutrition education (Table 4.2.2). The average nutrition educator spends 60 percent of her time on WIC. The Nutrition Education Coordinator is more likely to work full time: The typical Coordinator works for WIC an average of 34 hours per week and spends 23 of these hours on nutrition education--an average of 67 percent. Using 40 hours per week worked on nutrition education as a full time equivalent (FTE), there are 1.2 FTE nutrition education staff per service site. Each FTE nutrition educator serves approximately 1300 participants.\*

#### 4.3 Nutrition Education Materials

The Nutrition Education Coordinator at each local agency/service site in the sample was asked to rank the three major sources of nutrition education materials for use by participants and by staff and to indicate those sources that were never used. Their responses are summarized in Tables 4.3.1 and 4.3.2.

The primary source of materials for both participant use and staff use is the State WIC Agency. Another frequently ranked source is the local

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\*These FTE nutrition education figures are based only on WIC staff who provide nutrition education. Since information was not obtained for WIC staff who do not provide nutrition education, FTE WIC figures are not available.

TABLE 4.3.1

SOURCES OF NUTRITION EDUCATION MATERIALS FOR PARTICIPANTS  
(n = 309)

SOURCE	PERCENT OF STUDY SERVICE SITES:				
	RANKING SOURCE 1st	RANKING SOURCE 2nd	RANKING SOURCE 3rd	USING BUT NOT RANKING SOURCE	NOT USING SOURCE
<u>Most Important Sources</u>					
Your State WIC	53%	14%	7%	24%	2%
Your Local WIC	17%	19%	11%	43%	9%
Food Industry/ Private Company	9%	31%	23%	33%	3%
<u>Least Used Sources</u>					
University	--	1%	2%	62%	35%
Federal, non-WIC	<1%	4%	1%	68%	27%
Another State WIC	1%	2%	3%	67%	27%

TABLE 4.3.2  
SOURCES OF NUTRITION EDUCATION MATERIALS FOR STAFF  
(n = 307)

SOURCE	PERCENT OF STUDY SERVICE SITES:				
	RANKING SOURCE 1st	RANKING SOURCE 2nd	RANKING SOURCE 3rd	USING BUT NOT RANKING SOURCE	NOT USING SOURCE
<u>Most Important Sources</u>					
Your State WIC	41%	17%	1%	29%	3%
Health and Professional Organization	19%	18%	23%	38%	3%
Your Local WIC	12%	6%	4%	68%	9%
<u>Least Used Sources</u>					
Another State WIC	1%	1%	2%	77%	19%
Federal, non-WIC	1%	5%	3%	73%	18%
Local, not WIC	2%	3%	1%	78%	17%

agency. Among the least frequently used sources for both groups are another State WIC program and Federal, non-WIC programs. Additional information related to sources of nutrition education materials appears in Tables B.7 and B.8, Appendix B.

Almost 95 percent of service sites evaluate the nutrition education materials that they use. Most often these materials are evaluated by local agency nutritionists--either the Nutrition Education Coordinator or staff dietitians/nutritionists. Clinic physicians are seldom involved in the evaluation of materials (Table 4.3.3; Tables B.9, Appendix B).

Although all service sites evaluate their materials, only 17 percent use an evaluation form. For most of the sites the evaluation criteria include content evaluation (95%), visual appeal (90%), length (87%), ethnic appropriateness (81%), cost (81%), language appropriateness (80%), reading level (74%) and/or personal preference (65%).

#### **4.4 Training and Technical Assistance**

Although all State Agencies in the sample indicated that they provide training and technical assistance (T/TA) to nutrition educators, a few local Nutrition Education Coordinators (8%) reported that their local agency did not provide training/technical assistance (Table 4.4.1; Table B.10, Appendix B). When training/technical assistance is provided, it is most likely to be monthly (36%), quarterly (21%), or biweekly (13%). The local Nutrition Education Coordinator provides an average of 25 percent of T/TA, and 19 percent is obtained by sending nutrition educators to professional meetings or conventions. Only six percent of training/technical assistance is provided by outside consultants.

#### **4.5 Nutrition Education Sessions**

Local agencies and service sites provide nutrition education in a variety of settings (see Tables 4.5.1-4.5.2 and B.11 to B.12, Appendix B). Individual sessions are always available in more than two-thirds of the service sites; however, only 20 percent of study service sites always provide nutrition education through group sessions. In over 60 percent of the sites, printed materials or displays are always available. Self/auto instruction is

TABLE 4.3.3

EVALUATION OF NUTRITION EDUCATION MATERIALS  
(n = 294)

EVALUATION APPROACH	PERCENT OF STUDY SERVICE SITES SPECIFYING APPROACH
<u>Person Evaluating:</u>	
Local Agency Nutrition Education Coordinator	77%
Staff dieticians/nutritionists	75%
Local Agency Director/Coordinator	69%
<u>Person Deciding:</u>	
Local agency staff	91%
State agency staff	7%
Other	2%
<u>Methods Used to Evaluate:</u>	
Content Evaluation	95%
Visual Appeal	90%
Length (e.g., number of pages)	87%
Appropriateness for target population based on ethnicity	81%
Cost	81%
Appropriateness for target population based on language	80%
Reading Level Evaluation	74%
Personal Preference	65%
Evaluation Forms	12%
Other	6%

\*More than one approach may be indicated at each service site.

TABLE 4.4.1

TRAINING AND TECHNICAL ASSISTANCE (T/TA) PROVIDED  
BY LOCAL AGENCY STAFF

T/TA SERVICE	PERCENT OF STUDY SERVICE SITES RECEIVING T/TA
T/TA provided by local agency	
No	8%
Yes	92%
T/TA provided:	
Monthly	36%
Quarterly	21%
Biweekly	13%
Percent of T/TA provided by:	
Local NE Coordinator	25%
Professional meetings	19%
Local WIC Director	16%

TABLE 4.5.1  
SETTINGS USED TO PROVIDE NUTRITION EDUCATION

	PERCENT OF SAMPLE SERVICE SITES THAT ALWAYS USE SETTING:
<u>Type of Session:</u>	
Individual	69%
Print Material/ Display	63%
Group	20%
Self/Auto	5%
Other	3%
<u>Session Provided at:</u>	
Certification	93%
Food Instrument Pickup	38%
Medical Visit	21%
Food Pickup or Delivery	14%
Other	67%
<u>Size of Group Session:</u>	
Small (2-9)	24%
Medium (10-19)	4%
Large (20-29)	1%
Very Large (30+)	1%

TABLE 4.5.2  
NUTRITION EDUCATION SESSIONS

SESSION	SERVICE SITE RESPONSE
<u>Location</u>	
% in office	79%
% in waiting room	55%
% in conference room	30%
% in classroom	28%
<u>Length</u>	
Group Session	26.4 minutes
Answering questions	7.1 minutes
Individual Session	16.1 minutes
<u>Languages Spoken</u>	
English	93%
English only	56%
Spanish	39%
Other	17%

the least frequently used method for providing nutrition education: 77 percent of sites have no self/auto instruction available.

For most sites (93%), nutrition education is always provided at certification--the basic nutrition education contact. Over a third (37%) always have nutrition education available when participants pick up their food instruments/vouchers, and 58 percent sometimes have it available at voucher pickup. In over half of the service sites (207), nutrition education also is available during a medical visit and/or at another (unspecified) time.

When nutrition education is provided through a group session, the class is most likely to be small (2 to 9 participants). However, 52 percent of service sites sometimes provide medium groups (10 to 19 participants) at least some of the time, 33 percent provide large groups (20-29 participants) at least some of the time, and 18 percent always or sometimes provide group sessions for 30 or more participants. For each service site the formula used was:

$$\text{GROUP SIZE} = (S \times 5 + M \times 15 + L \times 25 + V \times 35)/5$$

where S = % of sessions using small groups  
M = % of sessions using medium groups  
L = % of sessions using large groups  
V = % of sessions using very large groups

With this formula, it is estimated that the average group size is 15.5 and that the median group size is 13. It should be noted that the size of group sessions in many service sites varies considerably, depending on the number of participants who attend on a given day.

Table 4.5.2 summarizes the locations that are used to provide nutrition education. The most frequently used locations are the office (79%) and the waiting room (55%). About 30 percent of service sites use classrooms and/or conference rooms to deliver nutrition education. Additional information is provided in Table B.12, Appendix B.

Nutrition Education Coordinators estimated that an individual nutrition education session lasts an average of approximately 16 minutes, with a range of from three to 45 minutes (Tables 4.5.2; B.13, Appendix B). The median length of individual sessions is 15 minutes. The typical group sessions are 5-10 minutes longer (mean: 26 minutes, median: 20 minutes), but some group sessions may last more than 1½ hours. In a typical group session,

staff spend an average of about seven minutes answering questions (median: 5 minutes).

Ninety-three percent of service sites have staff who speak English during nutrition education, but nearly half (43%) provide nutrition education in languages other than English (see Tables 4.5.2; B.14, Appendix B). More than a quarter of the study sites (29%) have nutrition education available in one other language besides English, and for 14 percent of the sample nutrition education is available in two other languages. The most often used non-English language is Spanish.

A wide variety of equipment and materials is used during nutrition education sessions (see Tables 4.5.3; B.15, Appendix B). During individual sessions participants are most likely to be given pamphlets (81%), demonstrations with food models (18%), and tests (10%). At group sessions, in addition to these approaches, flip charts, slides and films are frequently used at least some of the time.

At each service site, the Nutrition Education Coordinator was asked to indicate what nutrition- and program-specific topics are always covered or never covered in contacts with participants. Instructions accompanying the survey specified the term "always" taught to mean that "while not all participants...may be reached with this topic [the respondent feels] it is an important topic, that all should be reached, and...every attempt to reach them with this information [is made]." An indication that a topic is never taught means that the "agency does not teach this subject." Results are presented in Tables 4.5.4-4.5.6 and Tables B.16 to B.20, Appendix B).

The old Federal regulations require that four program-specific topics be taught at the basic nutrition education contact. These are:

- the importance of the supplemental foods being consumed by the participant for whom they are prescribed rather than by the whole family;
- the Program as a supplemental rather than total food program;
- the nutritional value of the supplemental food; and
- the importance of health care.

Nutrition Education Coordinators indicated that these four topic areas are usually taught to everyone (see Table 4.5.4). The most consistently taught of

TABLE 4.5.3  
METHODS USED TO PROVIDE NUTRITION EDUCATION

METHOD	ALWAYS	SOMETIMES	NEVER
<u>With Individuals</u>			
Pamphlets	81%	18%	1%
Food Models	18%	60%	22%
Tests	10%	35%	55%
<u>With Groups</u>			
Pamphlets	70%	25%	5%
Tests	20%	45%	35%
Slides	18%	64%	18%
Food Models	10%	66%	24%
Films	10%	63%	27%
Flip Charts	10%	61%	29%

TABLE 4.5.4  
PROGRAM SPECIFIC TOPICS ALWAYS TAUGHT TO EVERYONE

PARTICIPANT CATEGORY	SERVICE SITES ALWAYS TEACHING TOPIC								
	TOPIC		Food for Regular Health and Medical Care		Importance of Nutrition Education				
	Contents of Food Package	Food Package as a Source of Major Nutrients	Supplemental Nature of Food Package	n Percent	n Percent	n Percent	n Percent	n Percent	n Percent
Pregnant Women	293 94%	222 79%	278 89%	237 76%	262 84%	184 59%	253 81%		
Breastfeeding Women	286 92%	239 77%	277 89%	236 76%	183 59%	246 79%	106 34%		
Postpartum Non-Breastfeeding Women	239 79%	193 64%	245 81%	205 68%	159 53%	201 67%	249 79%		
Caretakers of Infant	296 94%	252 80%	280 89%	246 78%	255 81%	249 79%	154 49%		
Children or Care-takers of Children	290 92%	243 77%	280 89%	239 76%	227 72%	239 76%	104 33%		

TABLE 4.5.5  
NUTRITION EDUCATION TOPICS ALWAYS TAUGHT TO EVERYONE

	PERCENT OF STUDY SERVICE SITES ALWAYS TEACHING TOPIC	n
<u>Pregnant Women</u>		
Importance of diet	95%	309
Basic good diet	92%	309
Food sources of needed nutrients	85%	303
Advantages of breastfeeding	78%	310
<u>Breastfeeding Women</u>		
Importance of diet	90%	308
Basic food groups	86%	309
Fluids	78%	308
Additional nutrient needs	74%	307
<u>Postpartum/Nonbreastfeeding Women</u>		
Basic food groups	80%	273
Sources of vitamin C	54%	268
Sources of iron	52%	273
Sources of vitamin A	50%	267
<u>Infants</u>		
Introduction to solids	90%	311
Sources of iron	76%	312
Plotting and interpreting infant length and weight	74%	303
Transition to table food	72%	
<u>Children</u>		
Basic good diet	92%	310
Nutritional needs related to growth	79%	310
Plotting and interpreting growth	75%	310
Nutritious snacks	73%	310

TABLE 4.5.6  
NUTRITION EDUCATION TOPICS THAT ARE NEVER TAUGHT

	PERCENT OF STUDY SERVICE SITES NEVER TEACHING TOPIC	n
<u>Pregnant Women</u>		
Folacin	15%	304
Exercise during pregnancy	13%	307
Use of coffee	4%	309
<u>Breastfeeding Women</u>		
Composition of breastmilk	18%	308
Vitamin supplementation for infant	13%	307
Expressing breastmilk	12%	307
Emotional and technical support	8%	309
<u>Postpartum/Nonbreastfeeding Women</u>		
Pregnancy spacing related to birth outcome	25%	269
Food additives	25%	268
Handling and storage of foods	15%	270
Exercise	14%	
<u>Infants</u>		
Use of whole cow's milk	17%	310
Choking	6%	311
Preparation of formula	6%	310
Developmental readiness	4%	312
<u>Children</u>		
Immunizations	16%	310
Plotting and interpreting growth	6%	310
Dental health	3%	311

these topics is the supplemental nature of the food package, which is always taught to between 81 percent and 89 percent of participants. More participants, however, are given information about the contents of food packages (79%-94%). The least often taught required topic is the importance of health care (53%-84%), and the least frequently taught program-specific topic is the preparation of food (33%-81%). In general, program-specific topics are least often given to postpartum nonbreastfeeding women, perhaps because many of these women participated in WIC when they were pregnant and therefore already had been provided with the program-specific information.

The old Federal regulations also specify that the basic nutrition education contact include information about the participant's nutritional risk condition and ways to achieve an adequate diet. In addition, pregnant women must be encouraged to breastfeed, and caregivers of infants and children should be guided in meeting infant's and children's dietary needs in ways appropriate to the infant's or child's development. Subsequent contacts should emphasize the participant's particular nutritional needs.

Participant-specific nutrition education topics that are most often taught to everyone are summarized in Table 4.5.5. The most frequently provided topics generally concern dietary basics: the importance of diet, basic good diet, basic food groups, etc. It is evident, however, that WIC nutrition educators usually present the information required by the regulations: 78 percent of pregnant women are taught about the advantages of breastfeeding, and three quarters of the caregivers of infants and children are provided with information about nutrition and growth. Moreover, breastfeeding women often are given information specific to breastfeeding (fluids, additional nutrient needs), and postpartum nonbreastfeeding women are usually taught about nutrient sources.

Topics that are never presented to participants are summarized in Table 4.5.6. In general, these topics are not directly related to nutrition but rather concern the experience of parenthood (e.g., exercise, expressing breast milk, pregnancy spacing, immunizations and dental health). Nonetheless, they are important topics that will help to support WIC participants in their efforts to raise mentally and physically healthy children.

#### 4.6 Constraints to the Delivery of Nutrition Education Services

Nutrition education providers at local agencies and service sites were asked to indicate what factors they considered to be constraints to the provision and utilization of nutrition education services. Respondents were also asked to indicate which factor constituted the most severe constraint on provision and on utilization. Table 4.6.1 in the text and Tables B.21 and B.22 in Appendix B provide a summary of the responses.

Study respondents considered time to constitute the most severe constraint to the provision of nutrition education. Time also was the provider constraint indicated more frequently than any other. Inadequate space, number of personnel and child care were also cited as provider constraints by more than half of the respondents.

Four factors were mentioned by at least half of the respondents as constraining the utilization of nutrition education services by WIC clients: lack of interest, availability of transportation, child care and time. The participants' lack of interest was considered most severe by nearly a third of the sample. A quarter of the sample considered transportation as the most severe constraint to utilization, and over 10 percent cited the lack of child care as the most severe constraint.

Lack of staff time and an inadequate number of staff place limitations on the ability of staff to provide adequate nutrition education services to participants. Although this question captured only perception of time and number of personnel as constraining factors, other findings in the study support this information. Individual nutrition education sessions last an average of 16 minutes. Group sessions are 26 minutes long, with seven minutes devoted to answering questions. Thus, if a participant receives two nutrition education contacts per certification period, the average amount of time a given participant has to learn about nutrition through the WIC program ranges from 32 to 52 minutes, depending on the types of sessions used. This represents a limited amount of exposure to nutrition education.

Compounding the effects of limitations on time and staff is the perceived limitation of space. Anecdotal information about the delivery of WIC services at the local level provides some support to this perception. Often WIC Program services are offered through existing community facilities and programs, so that space limitations are common. Nutrition education

TABLE 4.6.1  
NUTRITION EDUCATION CONSTRAINTS  
ON PROVIDERS AND PARTICIPANTS

CONSTRAINT FOR	PERCENT OF SERVICE SITES EVER INDICATING	PERCENT OF SERVICE SITES INDICATING AS MOST SEVERE
<u>Providers</u>		
Time	78%	43%
Space	59%	23%
Number of Personnel	56%	18%
Child Care	53%	12%
<u>Participants</u>		
Interest	72%	32%
Transportation	72%	25%
Child Care	76%	21%
Time	63%	16%

providers, clerks, and/or aides may work in one or two rooms located within a facility that serves more than one function for the community. Moreover, to make WIC services more convenient, WIC personnel may operate out of more than one location. This procedure, while it serves to promote program utility for the client, presents a disruption for staff.

Clearly lack of space makes it more difficult to conduct one-to-one or group sessions effectively, especially if multiple activities take place in one area. Thus, at more than one level, space limitations constrain the provision of nutrition education services.

The lack of child care, cited by respondents as presenting a constraint to providers, was also considered to be a constraint to participants. For staff, the lack of child care makes it impossible to meet with caretakers without infants and young children present. This factor presents a distraction that limits the provider's ability to relay information effectively. For a parent/caretaker, lack of child care at the WIC site places limitations on the amount of time he/she can spend at the site if the child is left under the care of someone else. If the child goes with the parent/caretaker to the site, the child's presence makes it difficult for the parent/caretaker to pay full attention to the information being provided.

Inadequate transportation also was indicated as a major constraint for WIC participants. Most nutrition education is delivered through sessions at the service sites, so that participants must be able to travel to the site to attend a session. Although many sites provide nutrition education at times when the participant must be at the site for another reason (e.g., certification, voucher pickup), some sites arrange sessions at other times. Thus participants who cannot easily get to the service site may not attend these sessions.

Lack of interest among participants was cited as the most severe constraint to the utilization of nutrition education services. This constraint may be related to other constraints such as lack of space, transportation, or child care: participants may be less interested in nutrition education if it is difficult for them to attend or pay attention. However, participants also may feel that services are not useful to them or are incomprehensible. Alternatively, they may not be interested in changing their food and dietary services: low income families have multiple social and cultural pressures, and nutrition education may be of low priority to them.

It must be emphasized that these constraints reflect the perceptions of Nutrition Education Coordinators. They are cited here to provide some insights into the most difficult problems that staff face in providing WIC nutrition education services. Althouth there is some evidence that constraints are reflected in service delivery (see Section 6.6), staff nonetheless are clearly able to provide nutrition education as specified in the Federal regulations.



PARTICIPANT CHARACTERISTICS ASSOCIATED WITH THE RECEIPT OF NUTRITION EDUCATION

The WIC program policy allows for considerable tailoring of nutrition education to meet the individual needs of participants. The nutrition education provider has immediate access to information on each individual's nutritional/health status as well as other relevant information such as age and category. The provider is also in a position to follow the individual's progress. Improvements or regressions in nutritional or health status can be identified readily. Such information can be used to make a number of decisions about nutrition education services. For example, the selection of a topic can be specifically geared to the individual on the basis of particular interest or need. The participant's age, ethnic/cultural background, and/or income level can be used to tailor the message. Information relative to category and priority group can be taken into account while planning individual or group sessions. Preferences, education, and special interests or capabilities also can be used to focus contacts on the individual or group.

To identify how the characteristics of participants are related to specific nutrition education benefits received, crosstabulations of demographic and health status characteristics with nutrition education topics presented were generated. In addition, the estimated number of nutrition education contacts per month was compared for different subgroups of participants. The results of this analysis are summarized in the following section. Descriptions of items included under each nutrition education topic area are included in Appendix E.

5.1 Number of Nutrition Education Contacts

Both the old and the new Federal regulations require WIC service sites to offer participants at least two nutrition education contracts per certification. Generally, the first contact is provided at the time of certification or recertification; the second contact may be presented any time subsequently. Since the present study includes only active WIC participants, estimates of the number of nutrition education contacts received are severely overestimated by the early initial contact, especially for participants who have been on WIC for less than three months (See Section

2.4) For example, a participant who has been on WIC for one month and received one contact will have one contact per month, while a participant who has been on WIC two months and received one contact will have .5 contacts per month. At the end of six months, however, both participants may have received two contacts, or .33 contacts per month.

In Section 2.4, a correction formula was derived to adjust site-level estimates of the number of contacts provided. At the participant level, however, we have not estimated a model than can be used to project the number of contacts that will occur, given an initial contact and various site-level and participant-level covariates. Therefore, the information presented here--number of contacts per month on WIC -- may be useful for investigating relationships between participant characteristics and the number of contacts received, especially if participants in the comparison groups have been on WIC for approximately the same number of months. The number of contacts per month, however, overestimates the total number of contacts that are received.

Because one of the most important aspects of WIC nutrition education involves the number of contacts received per certification, the graphs presented in Figures 2-5 (Section 2.4), have been used to obtain some insights into this important issue. For example, in Figure 2, it is apparent that, with the exception of postpartum, nonbreastfeeding women, participants who have been on the program for six months (the standard certification period for all participants except pregnant women) have received approximately two nutrition education contacts, as specified in the regulations. It is also apparent, however, that the number of contacts declines over time. This is especially evident for children (Figure 4): Those children who have been on WIC for three years or more have received, on average, little more than one contact per certification.

This pattern may reflect a reluctance by participants to attend sessions that repeat the same information, or it may reflect the ability of staff to present new and useful information over time. Both staff and participants may feel that once the basic nutrition information has been presented, additional contacts are not necessary. Moreover, given constraints on staff time, staff may focus their nutrition education on participants who have not been previously certified. Thus, although participants may receive an average of less than two contacts per certification, those participants who are newly certified appear to be receiving the mandated number of contacts.

Comparisons of the number of contacts received per month on WIC for various participants characteristics are presented in Tables C.1-C-10, Appendix C. One pattern is consistently evident:

- Participants who are Hispanic, Asian or Native American (denoted as "Other") receive more contacts than do Black or White participants.

The consistency of this pattern is illustrated in Table 5.1. Although the significance of the finding may be elevated for pregnant and breastfeeding women because the "Other" (predominantly Hispanic) participants in these categories have been on WIC for less time, the pattern is nevertheless consistent across all participant categories. The fact that "Other" participants receive more contacts may be due to geographic or regional program differences or to an increased willingness of the "Other" participants to attend nutrition education sessions.

Another finding that is evident concerns WIC priority:

- Participants certified as Priority VII (Prevent Regression) receive fewer contacts per month.

This result probably reflects the fact that participants certified under Priority VII must have been on WIC previously. Thus, the significant difference may be due to the biased estimate of number of contacts. However, it may also reflect a diminishing number of contacts that are provided to these low priority participants.

There is no evidence that participants who are certified for anemia or for anthropometric reasons receive more nutrition education contacts. In fact, infants and breastfeeding women certified for anemia receive significantly fewer contacts. Since anemia-certified infants have been on WIC longer, their lower number of contacts may be due to the biased estimate of that variable. However, anemic breastfeeding mothers have been on WIC for less time. Thus, the fact that they also have fewer contacts tends to substantiate the validity of these results. Since there is little consistency across participant categories, however, the importance of the finding should not be exaggerated.

Another inconsistent result concerns number of contacts and age. Pregnant and breastfeeding women who are over 35 receive significantly more contacts. However, postpartum women over 35 receive fewer contacts. Older

Table 5.1

Number of Nutrition Education Contacts Per Month  
by Racial/Ethnic Group

PARTICIPANT CATEGORY	BLACK	WHITE	OTHER
Pregnant Women	.50	.52	.76
Breastfeeding Women	.41	.52	.75
Postpartum Women	.45	.56	.78
Infants	.42	.38	.46
Children	.27	.36	.50

infants and children also receive fewer contacts--a finding that probably reflects the fact that they have been on WIC longer. Thus, the relationship between participant age and the number of nutrition education contacts received is not clear.

## 5.2 Nutrition Education Topics and Participant Category

The Federal guidelines that were in effect at the time of the study specify nutrition education topic areas that should be covered with each participant (See Section 1.1) To investigate the extent to which topics are taught, the nutrition education record, which must be documented in the participant file, was reviewed for each study participant. Since many participants had received only one of the two required contacts per certification, many study participants had not been taught all of the specified topics. Nonetheless, the pattern of frequencies observed provides useful information about the nutrition education topics that are presented to participants.

There are several patterns that are evident (See Table 5.2 and Tables C.1 to C.10, Appendix C). First, with the exception of children, participants in each category are most frequently taught about their special dietary needs. For children, the most often presented topic concerns meal planning. This may reflect a focus on encouraging children to eat what is presented to them, rather than on preparing foods that the children need but will not eat.

In all categories, participants are usually given information about the WIC program--its supplemental nature, the foods that it provides and the rules for participation. This information generally is presented to participants at certification. The fact that the topics are not recorded for virtually all participants may reflect previous participation in other categories (for which data were not abstracted) or failure to record the topics in the participant's file.

A final pattern that is evident involves meal planning. As mentioned above, meal planning is the topic that is most frequently presented to the caregivers of children. It also is a topic that is consistently taught to pregnant, breastfeeding and postpartum women. The training guidelines (Appendix E) specified that the meal planning topic include:

Table 5.2

## Most Frequently Taught Nutrition Education Topics

Pregnant Women

- Dietary Needs During Pregnancy 84%
- WIC as Supplemental Program 68%
- WIC Foods for Participant Only 62%
- WIC Eligibility 59%
- Meal Planning 59%

Breastfeeding Women

- Dietary Needs During Lactation 78%
- Food Items in WIC Package 66%
- Breastfeeding 58%
- Meal Planning 56%
- WIC as Supplemental Program 54%

Postpartum/Nonbreastfeeding Women

- Dietary Needs Following Pregnancy 78%
- Foods Items in WIC Package 63%
- Meal Planning 53%
- Infant Feeding 48%
- WIC as Supplemental Program 46%
- WIC Foods for Participant Only 46%

Infants

- Infant Feeding and Care 75%
- Food Items in WIC Package 75%
- Dietary Needs During Infancy 68%
- WIC as Supplemental Program 61%
- WIC Program Eligibility 57%
- WIC Foods for Participant Only 57%

Children

- Meal Planning 72%
- Food Items in WIC Package 71%
- WIC as Supplemental Program 54%
- WIC Foods for Participant Only 51%
- Importance of Medical Care 51%

- menu planning;
- Basic Four Food Groups;
- spacing of meals;
- importance of variety;
- development of good eating habits.

Although these items are clearly important for good nutrition, they are not explicitly designated in the Federal guidelines. It appears, therefore, that many WIC programs present this information as a way to teach participants how to achieve an adequate diet.

The patterns noted here are generally similar to those indicated by Nutrition Education Coordinators as always being presented to participants (See Section 4.5). It is clear that WIC nutrition education focuses on two areas: the WIC program and ways to achieve an adequate diet. Topics in specific areas such as food and substances to avoid, weight control, pregnancy spacing, growth, etc. are taught less often. The only divergence in topics that staff plan to present and those that are recorded in participant files is in the area of food preparation, especially for pregnant and postpartum, nonbreastfeeding women. Approximately 80 percent of Nutrition Education Coordinators indicated that they always teach this topic, but it was noted in less than 20 percent of the records for these participant categories. This may be because the topic was not consistently interpreted by WIC staff and data collectors or because it is not usually presented at the first contact and therefore not yet recorded in many files.

### 5.3 Nutrition Education Benefits and Demographic Characteristics

The characteristics of age, race and poverty level at certification also were examined for associations with nutrition education topics received. Three types of relationships are especially worth noting:

- Nutrition education topics tend to be targeted to appropriate subgroups. For example, younger pregnant women (<18 years) are more frequently taught about pregnancy and age, and higher income women tend to be given information about food and substances to avoid.

- Caregivers of older infants and children, who have presumably attended more nutrition education sessions, have been presented with a greater variety of topics.
- White participants across all categories generally are presented topics less frequently than Black, Hispanic, Asian and Native American participants.

Summary statistics reflecting these and other relationships are provided in Tables 5.3-5.4. More complete information is contained in Appendix C.

As shown in Table 5.3, younger pregnant and postpartum, nonbreastfeeding women were usually presented participant-specific topics more often than were older women. For example, 40 percent of pregnant women aged 17 or younger received information about pregnancy and age, while only six percent of pregnant women aged 18-34 and 14 percent of pregnant women aged 35 or older received information on this topic. Younger postpartum, nonbreastfeeding women also were more likely to receive information on dietary needs, food preparation, weight control, pregnancy spacing and infant feeding.

Another example of targeting to subgroups is found for higher income pregnant women, who are more frequently taught about food and substances to avoid (See Table 5.4). Moreover, caregivers of infants in the lower income categories received some topics significantly more often than those in higher income categories. These include discussion of: the supplemental nature of the WIC program; use of WIC foods; the importance of health care and nutrition education; vitamin/mineral supplements, and infant growth. Similarly, caregivers of lower income children were more frequently taught about child growth and development, feeding problems, and the importance of health/medical care and of nutrition education.

It also appears that older infants and children consistently received more information in other topic areas (see Table C.9, Appendix C). This probably reflects the fact that older infants/children or their caregivers are exposed to more nutrition education sessions. Thus, there is evidence that nutrition educators tend to present new topics rather than repeat old ones.

One pattern that is found rather consistently across all categories involves racial/ethnic background. In Section 5.1 it was noted that Hispanics, Asians and Native Americans, as a group, receive significantly more

Table 5.3

Topics Taught by Age of Women

PARTICIPANT CATEGORY	TOPICS TAUGHT						PREGNANCY & AGE
	Dietary Needs	Food Preparation	Meal Planning	Weight Control	Pregnancy Spacing	Infant Feeding	
Pregnant Women							
<18	81%	19%	70%**	45%	NA	20%	28%**
18-34	80%	14%	55%	40%		16%	17%
35+	88%	14%	41%	47%		24%	15%
Postpartum Women							
<18	86%**	39%**	67%	49%**	30%**	59%**	NA
18-34	72%	17%	58%	29%	9%	38%	NA
35+	73%	20%	41%	34%	19%	52%	NA

Table 5.4  
Topics Taught by Poverty Status

PARTICIPANT CATEGORY	Food & Substances to Avoid	WIC as a Sup- plemental Program	Importance of Health/Medical Care	Nutrition Education	Vitamin/ Mineral Supplements	Infant/Child Growth	Feeding Problems
Pregnant							
Women							
<130%	32%**	75%	60%**	49%	NA	NA	NA
130-150%	20%	53%	48%	42%			
>150%	54%	57%	52%	40%			
Infants							
<130%	NA	67%**	62%	46%	25%	52%**	
130-150%		65%	74%	53%	27%	50%	
>150%		45%	46%	18%	3%	23%	
Children							
<130%	NA	57%	54%**	38%*	NA	52%**	42%**
130-150%		59%	50%	48%		46%	48%
>150%		41%	35%		31%	22%	

contacts; for most participant categories, both Blacks and Whites received about 30 percent fewer contacts than did the "Other" category. However, in terms of the number of participants who received specified topics, it is evident that for approximately 75 percent of the topic areas fewer Whites were presented topics than were Blacks or Others.

This finding is difficult to interpret. It may be because WIC staff try to present more information to minorities to help them use WIC foods within their ethnic traditions. It also may reflect a perception by WIC staff that minorities have greater medical or nutritional needs or require more information about the WIC program. Probably there are multiple explanations for the finding, depending on the service site and staff involved. Nonetheless, its consistency cannot be ignored.

#### 5.4 Nutrition Education Benefits Received and Health Status Characteristics

An investigation of the health status of participants, as measured by certifying risks (anemia, anthropometry) and priority (high/low) provides little indication that nutrition educators try to focus on the health needs of participants. For example, pregnant women, breastfeeding women and children who are certified for anemia do not appear to receive specific information that might improve their iron status. However, postpartum, nonbreastfeeding women certified for anemia were more frequently taught about meal planning than were postpartum women not certified for anemia (See Table C.6, Appendix C). Anemia-certified postpartum women also heard topics on dietary needs more often (86%) than postpartum women not certified for anemia (70%). In addition, caregivers of infants certified for anemia were more often taught about infant feeding (84% vs. 73%). However, given the inconsistency in differences in the number of contacts received by anemia-certified and nonanemia-certified participants (see Section 5.1), it is difficult to attach much importance to these scattered findings.

There also were few consistent patterns that suggest that high priority participants receive more nutrition education, especially in participant-specific areas. Moreover, although caregivers of infants and children certified for anthropometric reasons receive information on growth

more often, these differences were not significant. Thus it appears that nutrition education is provided to participants without regard for their general health status.

## 6.0 PROGRAM CHARACTERISTICS ASSOCIATED WITH NUTRITION EDUCATION OUTCOMES

Chapters Three, Four and Five provide extensive descriptive information on the nutrition education component of the WIC program. It is clear from these chapters that State and local WIC programs vary considerably in the methods that they use to provide nutrition education. In this chapter, four aspects of local WIC programs are considered further:

- Service site characteristics
- Methods used to deliver nutrition education
- Staff characteristics
- Methods used to promote breastfeeding

These aspects are related to four participant-level outcome measures:

- Number of nutrition education contacts, as estimated using the formula presented in Section 2.4
- Percent of participants taught about the WIC program (e.g. the supplemental nature of WIC foods)
- Percent of participants taught about meal planning and food preparation
- Percent of participants taught about special topics pertaining to their particular medical and nutritional needs (e.g. breastfeeding, infant feeding schedules, children's growth)

In addition, four "process" outcomes are considered: group size, length of group sessions, time spent answering questions and length of individual sessions. Finally, relationships between program characteristics and constraints to providing nutrition education are investigated.

Data for these analyses were obtained from three sources--the Local Agency Questionnaire, the Nutrition Education Coordinator Questionnaire and the information contained in participant records. To facilitate analyses, a merged file was created with one record for each service site. The participant data were averaged for all study participants included at the service site (usually 17 or 34 participants, depending on whether the local agency operates more than one site). Although these participants were randomly selected within participant category, the sample is not large enough to support within-category analyses. Indeed, since at most 34 participants were

sampled per site no matter how large the site, the sample size may not always be sufficient to reflect actual service site outcomes across categories.

It should be noted that the relationships described in this chapter reflect only bivariate analyses that have not fully investigated a number of potentially confounding variables. For example, large service sites may have a lower percentage of staff who are nutritionists, or they may be more likely to use retail outlets to supply supplemental foods. Therefore, some of the findings reported may not, in fact, be totally a function of the independent variable identified.

#### 6.1 The Relationship Between Session Length and Number of Contacts

One issue that is of particular interest to policymakers involves the relationship between session length and number of contacts: Do service sites that provide more contacts tend to hold shorter sessions. This issue was investigated by generating Pearson correlations between the service site-level estimate of the number of contacts per six months and the number of minutes that the typical group and individual session lasts at that service site. The correlation between number of contacts and time spent answering questions also was computed. Results indicate that:

- Service sites that provide more contacts hold shorter nutrition education sessions.

The correlation between number of contacts and length of group sessions is  $-.21$  ( $p<.001$ ), and the correlation between number of contacts and length of individual sessions is  $-.18$  ( $p<.01$ ). Similarly, the correlation between number of contacts and time spent answering questions during group sessions is  $-.20$  ( $p<.01$ ). Thus it appears that service sites that offer fewer sessions may compensate by spending more time with participants.

This finding is not surprising given the perceived constraints on staff time and numbers. Many service sites do not have adequate staff to provide long and frequent nutrition education sessions. Some sites may offer more sessions, but these sessions tend to be shorter; others offer longer sessions less frequently. As a result, participants may receive approximately the same amount of information, regardless of how sessions are provided.

## 6.2 Site Characteristics

Two types of analyses were conducted to examine relationships between site characteristics and nutrition education outcomes. First, the means of five dependent variables--estimated number of contacts, group size, length of group sessions, time spent answering questions during group sessions, and length of individual sessions--were compared for the following characteristics:

- Type of food delivery system (retail/nonretail)
- Frequency of voucher issuance (at least monthly/less than monthly)
- Availability of transportation (yes/no)
- Availability of child care (yes/no)
- Location (urban/rural)
- Sponsor (health agency/non-health agency)

Then, to include the continuous variable "agency size" in the analyses, a regression equation was estimated for each dependent variable using a forward, stepwise regression technique. Only variables that were significant at the .05 level were included in the equation. Results of these analyses are summarized in Table 6.1.1 and presented in detail in Tables D.1 and D.2, Appendix D.

The analyses indicate that the composition of group sessions is related to the size of the service site:

- Service sites that serve more participants hold large group sessions that last longer and in which more time is spent answering questions.

Size, however, does not significantly affect either the number of contacts provided to participants or the length of individual sessions.

The estimated number of nutrition education contacts received by participants is primarily associated with the food delivery system:

- Service sites that supply food through retail outlets and issue vouchers at least once a month provide more nutrition education contacts.

TABLE 6.1.1  
SUMMARY OF SIGNIFICANT OUTCOMES ASSOCIATED WITH  
SITE CHARACTERISTICS

OUTCOME	ASSOCIATED CHARACTERISTIC	DIRECTION
Estimated Number of Contacts	<ul style="list-style-type: none"> <li>● Food supplied through retail outlet</li> <li>● Vouchers issued at least once a month</li> <li>● Program sponsored by Health Agency</li> </ul>	+ + -
Group Size	<ul style="list-style-type: none"> <li>● Number of participants served</li> </ul>	+ + +
Length of Group Session	<ul style="list-style-type: none"> <li>● Number of participants served</li> </ul>	+ + +
Time Spent Answering Questions	<ul style="list-style-type: none"> <li>● Number of participants served</li> </ul>	+ + +
Length of Individual Session	<ul style="list-style-type: none"> <li>● Transportation available through nonparticipant source</li> <li>● Child care available</li> <li>● Program sponsored by Health Agency</li> <li>● Urban location</li> </ul>	+ + + +

It seems reasonable to infer from this finding that if participants frequently have to go to the WIC agency to obtain food vouchers, there is a greater opportunity to provide them with nutrition education.

The type of agency that sponsors the WIC program also is related to the number of contacts received:

- Programs that are sponsored by a health agency provide fewer nutrition education contacts, but longer individual sessions.

This finding is somewhat more difficult to interpret. Possibly health agencies sponsor WIC programs that are located in a busy clinic setting, where there is a greater focus on health than on nutrition education. However, there are many confounding variables that must be considered (e.g. are health agencies less likely to provide supplemental foods through a retail outlet?). In addition, programs that are sponsored by a health agency offer longer individual sessions. Given that health agencies offer fewer contacts, it may be that health agencies provide fewer but more intensive individual sessions. Thus, it may be important to assess the relative effectiveness of many short sessions vs. fewer long sessions.

The length of individual nutrition education sessions also is related to the ability of the participant to attend the session:

- Service sites that are accessible to participants and that provide child care hold longer individual sessions.

The availability of transportation refers to transportation methods that do not require participants to drive or walk to the service site--either public transportation is available or transportation is supplied by WIC or by another public agency. Not surprisingly, being in an urban location, which generally will have transportation available, also is associated with longer individual sessions.

### 6.3 Models for Delivering Nutrition Education

The results presented in Section 4.5 describe the variety of settings that are used to provide nutrition education to WIC participants. Two questions that emerge from these results are whether there are typical models for providing nutrition education and, if there are, which nutrition education outcomes are associated with the models. To address these questions, a

principal components factor analysis was undertaken using the following variables:

- Types of space used
  - conference room
  - classroom
  - office
  - waiting room
- Materials/equipment used
  - pamphlets/brochures
  - audiovisual aids (slides, films, filmstrips)
  - pre/post tests
  - food models/flip charts
  - food preparation demonstrations
- Occasions at which nutrition education is always provided
  - certification
  - voucher/food pickup
  - medical visit
- Availability of visits for nutrition education only
- Settings always used to provide nutrition education
  - group sessions
  - individual sessions
  - print material displays
- Average group size

The 17 variables were selected after inspecting results from a number of preliminary analyses. The final factor model is described in detail in Table D.3, Appendix D. A summary of interpretable factors is presented in Table 6.2.1.

The factors that emerge from these analyses are generally intuitive. The factors reflect five different models that are used to provide nutrition education:

- group sessions, which are held in a classroom and frequently use audiovisual aids to present information.
- specially arranged sessions that involve a demonstration and/or handouts of pamphlets/brochures.

TABLE 6.2.1  
MODELS FOR DELIVERING NUTRITION EDUCATION

MODEL 1: GROUP SESSIONS

- Held in classroom
- Use audiovisual aids
- Held in sites that usually offer groups
- Involve larger numbers of participants

MODEL 2: SPECIAL SESSIONS

- Use pamphlets/brochures, food models/flip charts, food preparation demonstrations
- Held in sites that provide visits for nutrition education only

MODEL 3: DISPLAYS

- Available in offices and waiting rooms
- Display printed materials

MODEL 4: SESSIONS REQUIRING MINIMAL STAFF INVOLVEMENT

- Provide participants with tests to take on cassette tapes to listen to
- Held at voucher/food pickup
- Seldom held during medical visits

MODEL 5: CERTIFICATION SESSIONS

- Held at certification
- Require minimal materials, equipment
- Held in sites that usually provide individual sessions

- displays of printed materials in offices and/or waiting rooms.
- tests and tapes that are provided to participants when they pick up vouchers or food, but that are seldom used during medical visits.
- individual sessions that are provided at certification and do not generally involve the use of materials and equipment.

The factors above are presented in order, based on the size of the eigenvalues.

However, all the eigenvalues associated with these factors are relatively small, reflecting the fact, born out in subsequent analyses, that for the most part agencies do not use pure "models" but use instead amalgams of several different models. Even the first two factors--group sessions and specially arranged sessions--do not appear to hold up as models.

To provide some information about relationships that may exist between the model components and the delivery of nutrition education, the estimated number of nutrition education contacts and the percent of participants who were exposed to three topical categories (general WIC topics, participant-specific topics, food preparation topics) were compared for those programs that utilized various methods of providing nutrition education and those programs that did not. Results are summarized in Table 6.2.2; more detailed information is provided in Tables D.4 to D.5. These findings indicate that:

- Sites provide more contacts if they hold group sessions more often, (Model 1) and teach nutrition education at food/voucher pickup, especially if the participant is directed to a presentation model involving little staff involvement (Model 4).
- Participants are more likely to be given general information about WIC through information available in waiting rooms (Model 3).
- Participants tend to receive information about food preparation/meal planning and about topics specific to their needs through individual sessions provided during certification and/or medical visits (Model 5).

Thus, even though most service sites use a variety of techniques to provide nutrition education, it is possible to identify certain approaches that appear

TABLE 6.2.2

SUMMARY OF SIGNIFICANT OUTCOMES ASSOCIATED WITH  
THE DELIVERY OF NUTRITION EDUCATION

OUTCOME	ASSOCIATED DELIVERY MODE	DIRECTION
Estimated number of contacts	<ul style="list-style-type: none"> <li>● Session provided at certification</li> <li>● Session provided at food/voucher pickup</li> <li>● Group session usually offered</li> <li>● Session held in classroom</li> <li>● Session held in office</li> <li>● Participants administered tests</li> <li>● Participants given food demonstration</li> </ul>	- + + + - + -
Exposure to WIC topic	<ul style="list-style-type: none"> <li>● Session provided in waiting room</li> <li>● Session uses audiovisual aid</li> <li>● Session uses food model/flip charts</li> </ul>	+ - -
Exposure to Food Preparation Topic	<ul style="list-style-type: none"> <li>● Session provided at medical visit</li> <li>● Individual session usually available</li> </ul>	+ +
Exposure to Participant-Specific Topic	<ul style="list-style-type: none"> <li>● Session provided at certification</li> <li>● Session provided at medical visit</li> <li>● Individual session usually available</li> <li>● Pamphlets/brochures provided</li> </ul>	+ + + -

to be associated with particular outcomes. Moreover, the relationships identified are intuitively appealing: they seem to reflect what one might expect from the various approaches.

#### **6.4 Staff Characteristics Associated with Nutrition Education Outcomes**

Section 4.2 provided descriptive information about the nutrition education staff that work at the study service sites. From this information, five variables were selected for inclusion in the relational analyses:

- Educational level, adjusted to reflect the amount of time that the staff member works on nutrition education
- Years of experience, adjusted to reflect the amount of time that the staff member works on nutrition education
- Percent of staff who have a background in nutrition or dietetics
- Percent of time that staff spend on nutrition education
- Number of participants per full time equivalent (FTE) staff member

Since all of these variables represent continuous data, two types of analyses were used to investigate relationships with the dependent variables described in Section 6.0. These involved correlations and regression analysis. Results are summarized in Table 6.3.1. Detailed information is provided in Tables D.6 and D.7, Appendix D.

There are two staff characteristics that are associated with nutrition education outcomes: the percent of staff with a background in nutrition/dietetics and the number of participants per FTE staff member. In general,

- Programs with fewer nutritionists/dietitians provide more nutrition education contacts but spend less time holding group sessions and answering questions in those sessions.
- Programs that have more participants per FTE staff are less likely to present participants with information about WIC and about participant-specific topics.

The first result suggests that programs in which staff are responsible for more participants may not have enough time and resources to ensure that all participants receive the required nutrition education topics. The second result may reflect the fact that staff with a background in nutrition have

TABLE 6.3.1  
SUMMARY OF SIGNIFICANT OUTCOMES ASSOCIATED WITH  
STAFF CHARACTERISTICS

OUTCOME	STAFF CHARACTERISTIC	DIRECTION
Estimated number of contacts	● Percent of staff with nutrition background	-
Percent of participants exposed to WIC topics	● Number of participants per FTE staff ● Percent of staff time on nutrition education ( $p < .10$ )	- -
Percent of participants exposed to category-specific topics	● Number of participants per FTE staff	-
Length of group session	● Percent of staff with nutrition background	+
Minutes in group session devoted to questions	● Percent of staff with nutrition background ● Number of participants per FTE staff	+

more information to present to participants during group sessions and may be more capable of encouraging and fielding questions. However, programs that employ more nurses, technicians and clerical staff may be able to set up more sessions that do not require a nutritionist. Thus there may be two compensating factors: programs with many paraprofessional staff may be able to provide more contacts, but these contacts may be less comprehensive and less focused on specific participant needs.

#### **6.5      The Promotion of Breastfeeding**

A description of the methods that local agencies and service sites use to promote breastfeeding was provided in Section 4.1. The relationship between these methods and the percent of women who breastfeed also has been investigated. The outcome measure considered--percent of women who breastfeed--has been estimated by computing the ratio of the number of breastfeeding women at the service site to the number of pregnant women at the service site. This is a more appropriate measure than the ratio of breastfeeding women to nonbreastfeeding women because many service sites limit the participation of postpartum/nonbreastfeeding women. Nonetheless, the measure is only a rough estimate of the number of pregnant women at the service site who eventually breastfeed.

Information about breastfeeding relationships is presented in Tables 6.4.1 and D.8, Appendix D. Results suggest that when breastfeeding is emphasized, more women breastfeed. In particular,

- Providing continuing support through group sessions or hotlines is associated with a greater percentage of breastfeeding mothers.

This finding reflects the need to support new mothers actively during the months that they breastfeed, rather than merely inform them about the advantages of breastfeeding. The finding may also suggest, however, that more active support is provided in areas where mothers tend to breastfeed. Nonetheless, there is a clear relationship between support and breastfeeding.

Also included in the information collected about breastfeeding promotion is the number of months that staff feel that mothers should breastfeed. This variable, though, is not significantly related to the percent of women who breastfeed ( $r=.08$ ).

TABLE 6.4.1

EFFECT OF BREASTFEEDING PROMOTION ON  
PERCENT OF WOMEN WHO BREASTFEED

PROMOTION METHOD	PERCENT OF WOMEN WHO BREASTFEED <sup>a</sup>
Incorporates topic into other information without special emphasis on breastfeeding	
Yes	27%
No	32%
Distributes specific pamphlets on breastfeeding	
Yes	30%
No	20%
Shows audiovisuals on breastfeeding to participant	
Yes	33%
No	27%
Conducts staff inservice training on subject	
Yes	32%
No	28%
Provides individual counseling on breastfeeding	
Yes	30%
No	27%
Provides group sessions/operates hotline at WIC service site	
Yes	34%*
No	26%
Makes referrals to support group or hotline	
Yes	33%*
No	25%

+ p &lt; .10

\* p &lt; .05

\*\* p &lt; .01

<sup>a</sup>Estimated as the ratio of breastfeeding women to pregnant women.

## 6.6 The Relationship of Constraints to Nutrition Education Outcomes

In Section 4.6, the factors that staff feel constrain the delivery of nutrition education, both for themselves and for participants, were reported. To investigate the association between these constraints and nutrition education outcomes, means for each of the following variables were compared for the presence/absence of constraints:

- Estimated number of nutrition education contacts
- Length of group sessions
- Length of individual sessions
- Percent of participants taught about
  - WIC topics
  - Food planning topics
  - Participant-specific topics

Results are summarized in Table 6.5.1 and in detail in Tables D.9 and D.10, Appendix D.

The presence of constraints at the service site most greatly affects the number of contacts that are provided and the length of group sessions:

- Constraints reduce the number of nutrition education contacts.
- Constraints increase the length of group sessions.

In particular, time, the most frequent and severe constraint for staff, is associated with significantly fewer contacts, as is interest, the most severe constraint for participants. In addition, constraints on the number of staff available and on participants' time and schedule are significantly related to fewer contacts.

Constraints are also generally related to an increase in the time spent in group sessions, especially for participants. Significant differences are found for transportation, child care, scheduling and language constraints. The relationship between language constraints and group session length is significant for both participants and staff. Moreover, transportation and schedule constraints on participants are associated with increased time in individual sessions.

TABLE 6.5.1  
RELATIONSHIP OF CONSTRAINTS TO  
NUTRITION EDUCATION OUTCOMES

OUTCOME	CONSTRAINT	DIRECTION
Estimated number of nutrition education contacts	<ul style="list-style-type: none"> <li>● Participant time</li> <li>● Staff time</li> <li>● Participant interest</li> <li>● Participant schedule</li> <li>● Number of staff</li> </ul>	-
Length of Group Session	<ul style="list-style-type: none"> <li>● Transportation</li> <li>● Child care</li> <li>● Participant schedule</li> <li>● Language</li> </ul>	+
Length of Individual Session	<ul style="list-style-type: none"> <li>● Transportation</li> <li>● Participant schedule</li> </ul>	+
Percent of Participants Exposed to Food Planning Topic	<ul style="list-style-type: none"> <li>● Participant time</li> <li>● Participant interest</li> <li>● Number of staff</li> </ul>	-
Percent of Participants Exposed to Category-Specific Topic	<ul style="list-style-type: none"> <li>● Participant interest</li> <li>● Number of staff</li> </ul>	-

There also is some evidence that time and interest constraints for participants as well as constraints on the number of staff available reduce the frequency with which participants are presented information about food planning and about their own special needs. There is no relationship, however, between constraints and the presentation of general WIC topics. As noted in Section 6.2, WIC topics are more frequently presented in service sites that used printed displays in waiting rooms. Thus, their presentation may be less vulnerable to the constraints mentioned.

These results are quite similar to the findings about staff characteristics (Section 6.3) and the number of contacts vs. group size (Section 6.4). It appears that nutrition education coordinators who have fewer staff with a background in nutrition are more likely to perceive constraints. These constraints, then, are related to fewer nutrition education contacts and longer group and individual sessions. However, there also is evidence that at service sites where staff feel most constrained, they may be less likely to focus the session on participant-specific and food planning topics, which may require greater preparation time. Moreover, the results suggest that when participants are less able to attend nutrition education sessions due to transportation, child care and/or scheduling constraints, nutrition education staff may compensate by holding longer sessions.











